



Joint Theater Trauma System: Strategic Overview

MHS Conference
January 2011

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UNCLASSIFIED

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JTTS Vision

That every soldier, marine, sailor, or airman injured on the battlefield or in the theater of operations has the optimal chance for survival and maximal potential for functional recovery.

JTTS Mission

- Improve organization and delivery of trauma care
- Improve communication among clinicians in the evacuation chain to ensure continuity of care and access to data
- Populate the JTTR to evaluate care provided, document outcomes, and facilitate conduct of formal research

JTTS Mission

- Evaluate and recommend new equipment or medical supplies for use in theater to improve efficiency, reduce cost, improve outcomes
- Facilitate Morbidity and Mortality conferences to promote real-time, data-driven clinical process improvements and improved outcomes
- Develop and implement clinical practice guidelines; monitor compliance with them

Data

- Data drives doctrine and policy
- Data improves clinical patient care
- Data creates new knowledge

Joint Theater Trauma Registry (JTTR)

- Largest combat Injury database in existence
- All services injury data derived from level IIb, III, IV and V medical charts
 - Scoring of Injuries
 - Diagnosis and Procedures
 - Outcomes
- 23,450 US military injury patients

JTTS Components

R4 - "Right Patient, Right Place, Right Time, Right Care"

Components Across the Continuum of Care

Performance Improvement

- ❖ Patient Safety
- ❖ Feedback Mechanism for Providers Throughout Continuum of Care
- ❖ Loop Closure

Leadership & Communication

- ❖ Trauma Director / Coordinators / Registrars
- ❖ Intra-Theater
- ❖ Inter-Theater
- ❖ Recognized Lead Agent and Consulting Assets

Integrated Pre-Hospital, Levels 3-5

- ❖ Integrated approach for MTFs and Divisional Medical Units
- ❖ Coordinated Divisional Evacuation Standard Operating Procedures
- ❖ Adopt Clinical Practice Guidelines
- ❖ Communicate
- ❖ Train

Education & Advocacy

- ❖ Linkage with Service Medical Education and Training Centers
- ❖ Joint Combat Trauma Management Course (JCTMC)
- ❖ Trauma Outcomes and Performance Improvement Course - Military (TOPIC-M)

Prevention

- ❖ Linkage with Materiel Developers
- ❖ Service Centers for Health Promotion and Preventive Medicine

Information Systems

- ❖ Joint Theater Trauma Registry (JTTR)
- ❖ Data for PI and Analysis
- ❖ Data from Theater Medical Data Store (TMDS)
- ❖ Modules to Support Related Functional Disciplines
- ❖ DoD Trauma Registry - Longitudinal Trauma Registry
- ❖ Provide Data and Information Needs for MTFs / Services / DoD

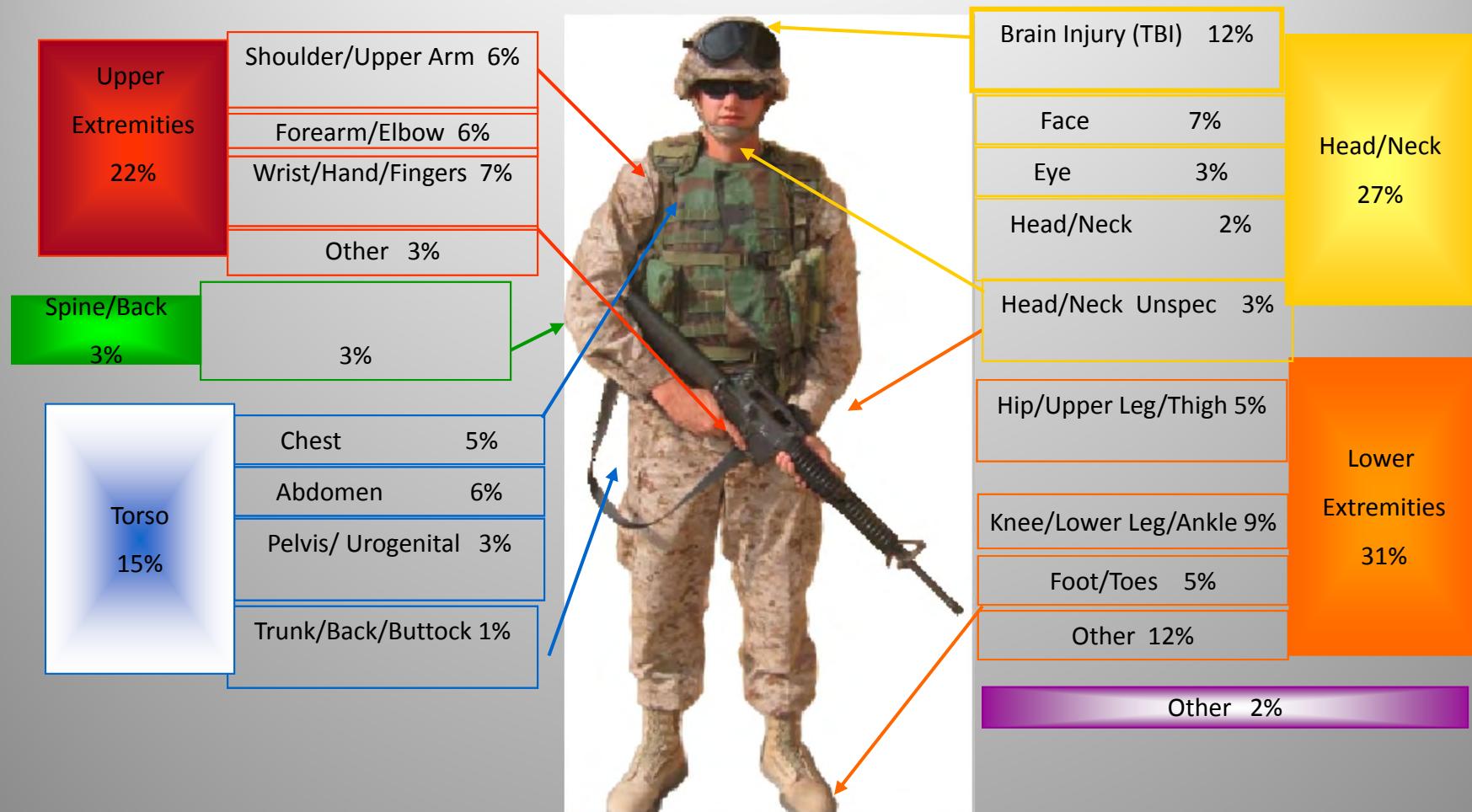
Supports Research

- ❖ Provide Raw Data IAW Established MOAs and Protocols
- ❖ Provided statistical information through approved protocols

Leadership Visibility *Medical Decision Making*

Data drives doctrine and policy

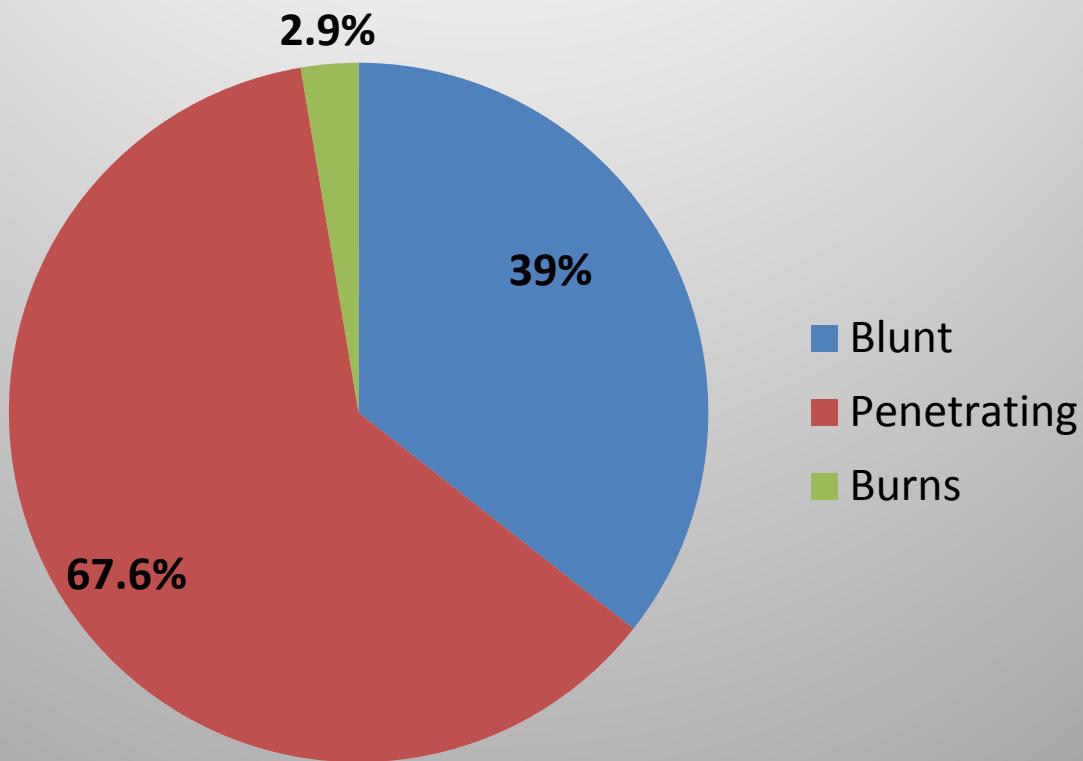
Battle Injuries by Body Region



Source: JTTR September 2001 – September 2010

OEF

Dominant Mechanism of Injury



N=7254

Dec 09 – Nov 10

/2012

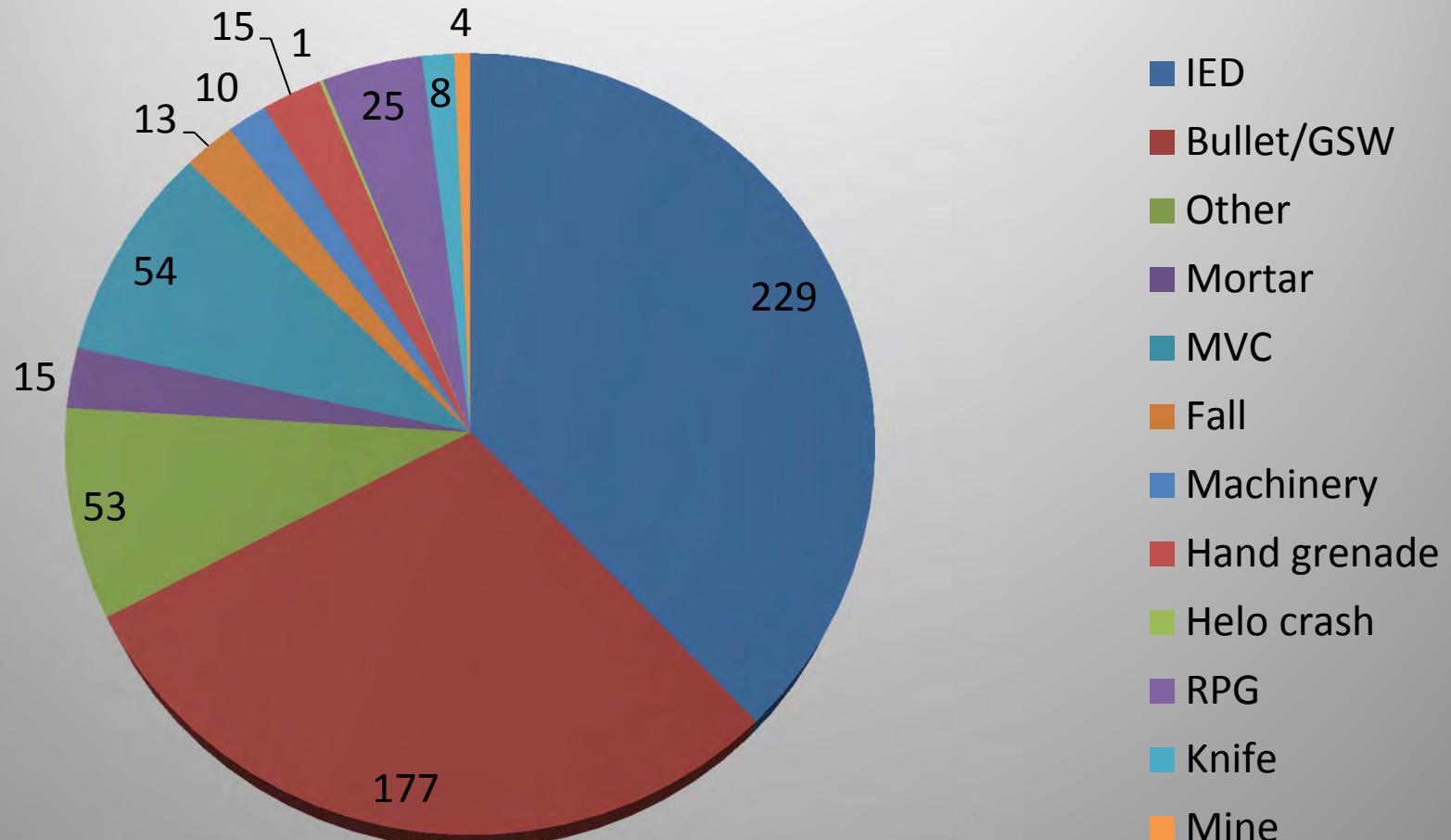
32

Right Patient, Right Care, Right Place, Right Time

Cause of Injury

November 2010

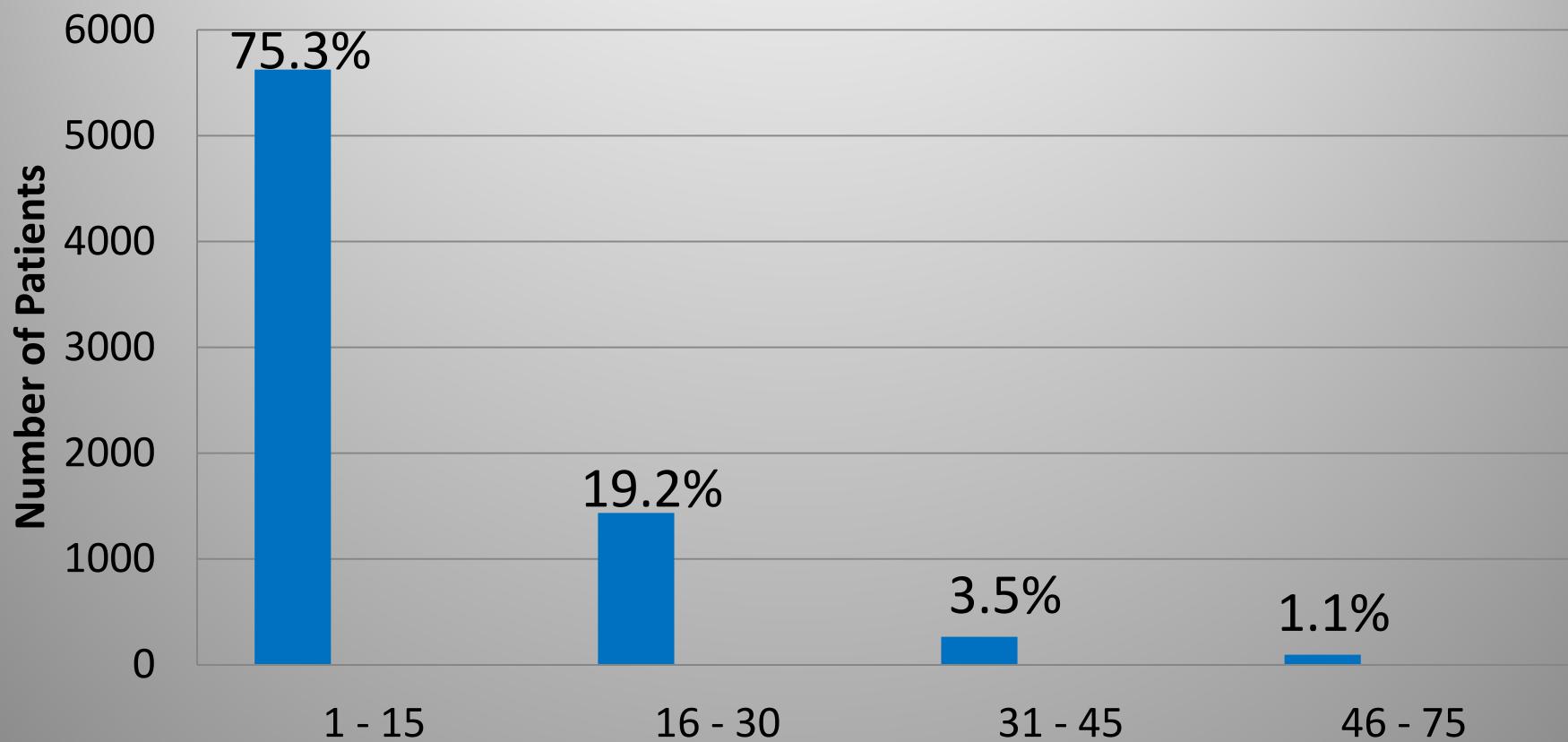
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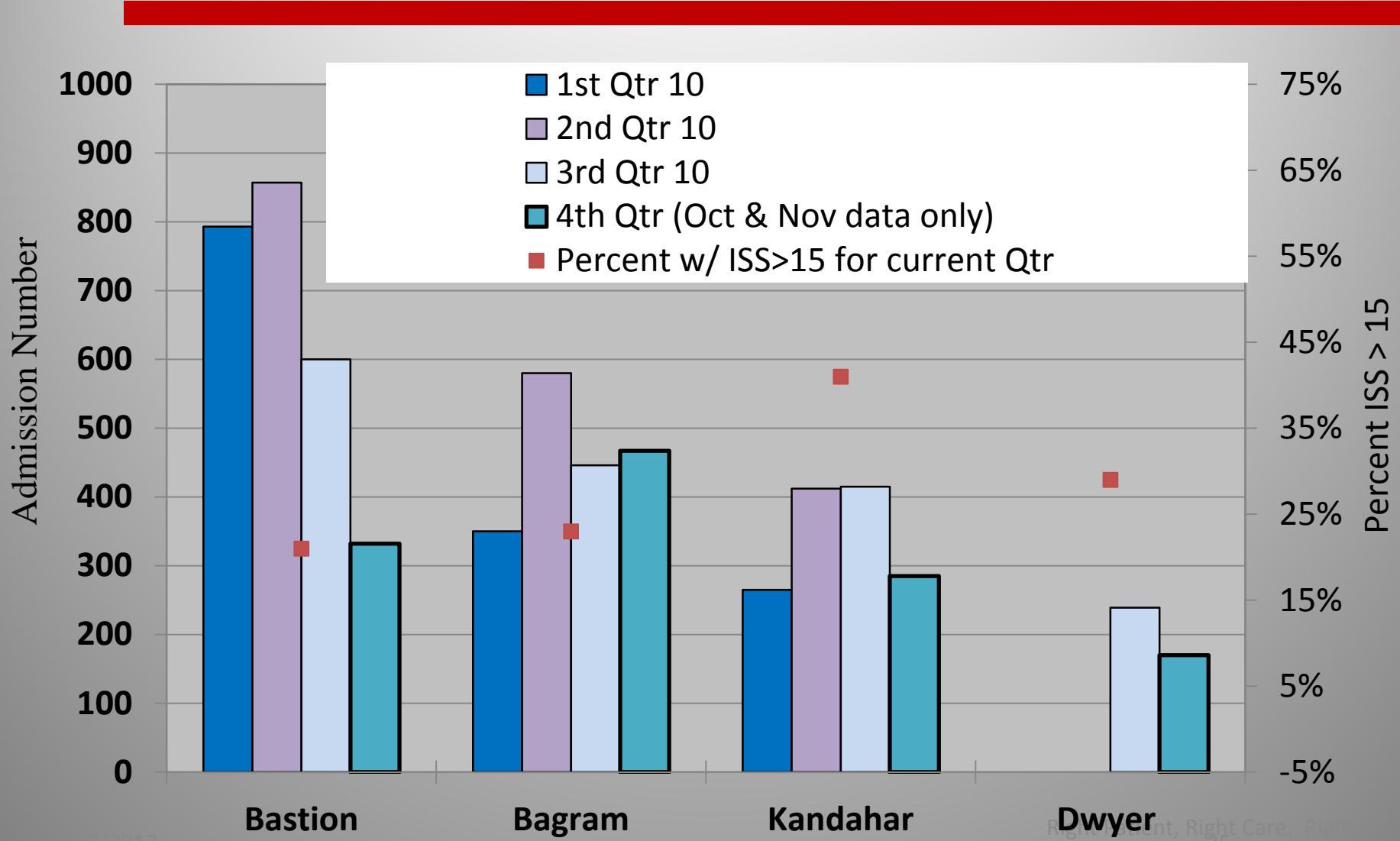
**Includes both battle and non-battle injury*

Injury Severity Score

ISS Score Break-down: Dec 09 – Nov 10

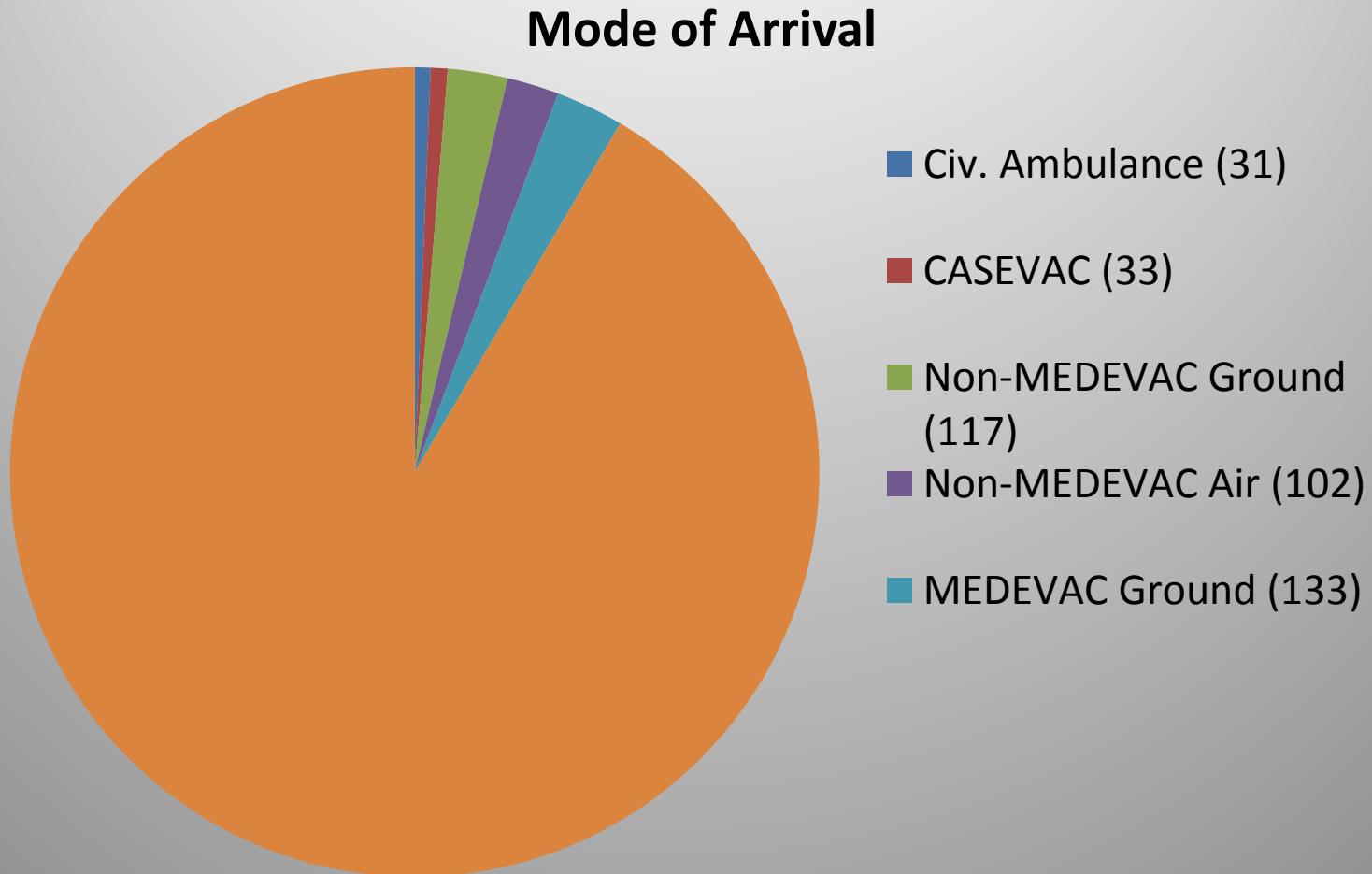


Admissions, Severity of Injury

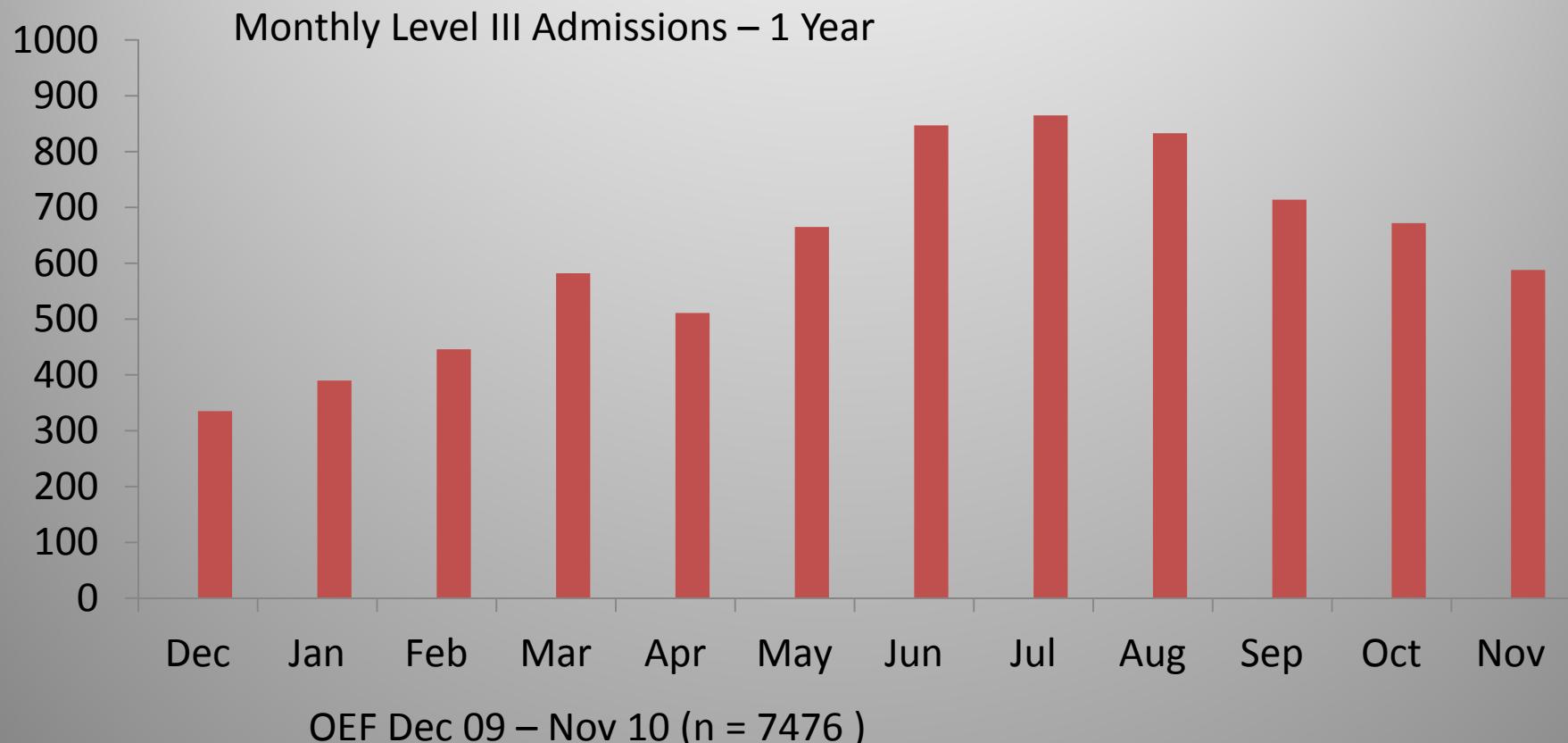


OEF Mode of Arrival

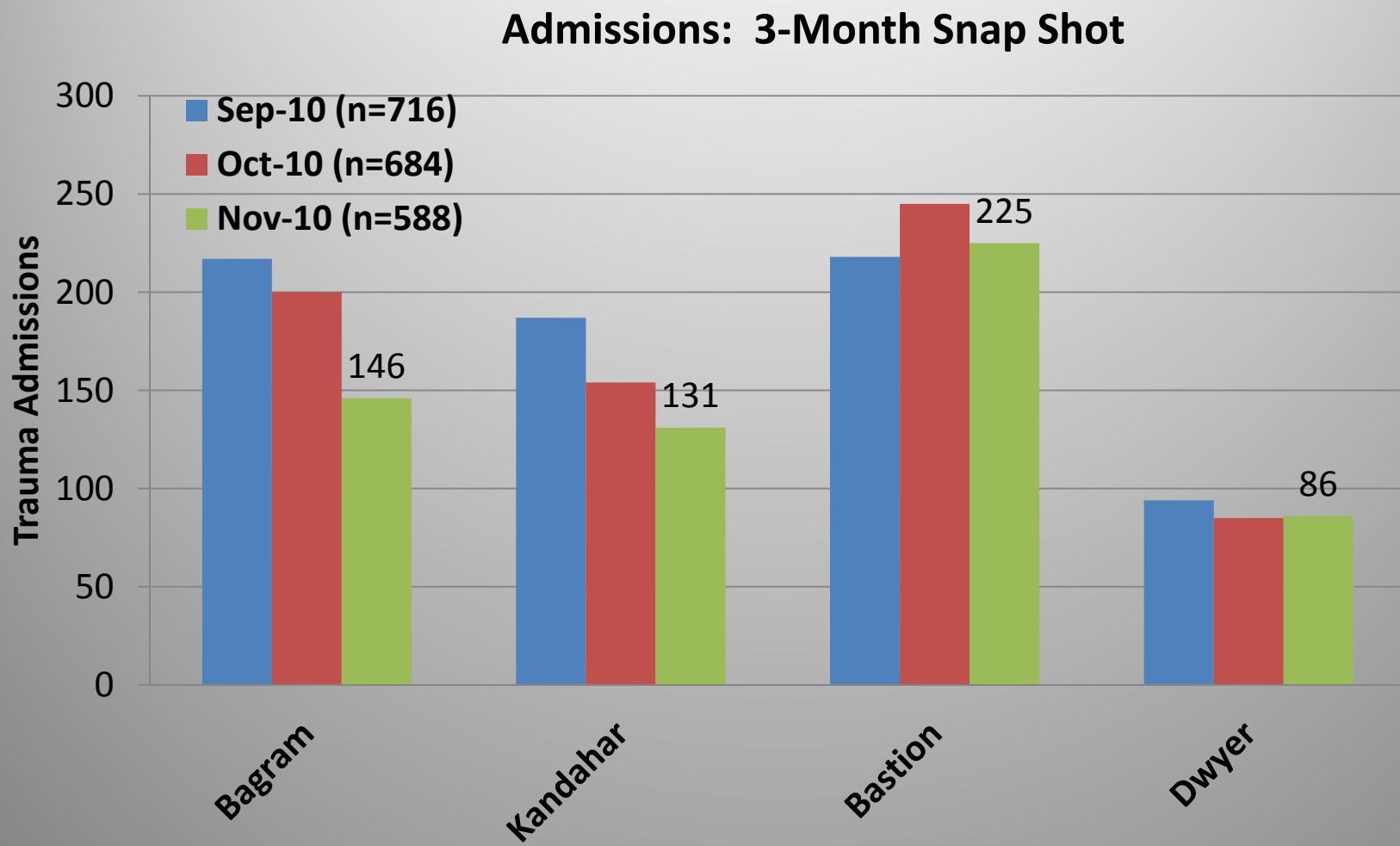
Dec 09 – Nov 10



OEF Monthly Admissions



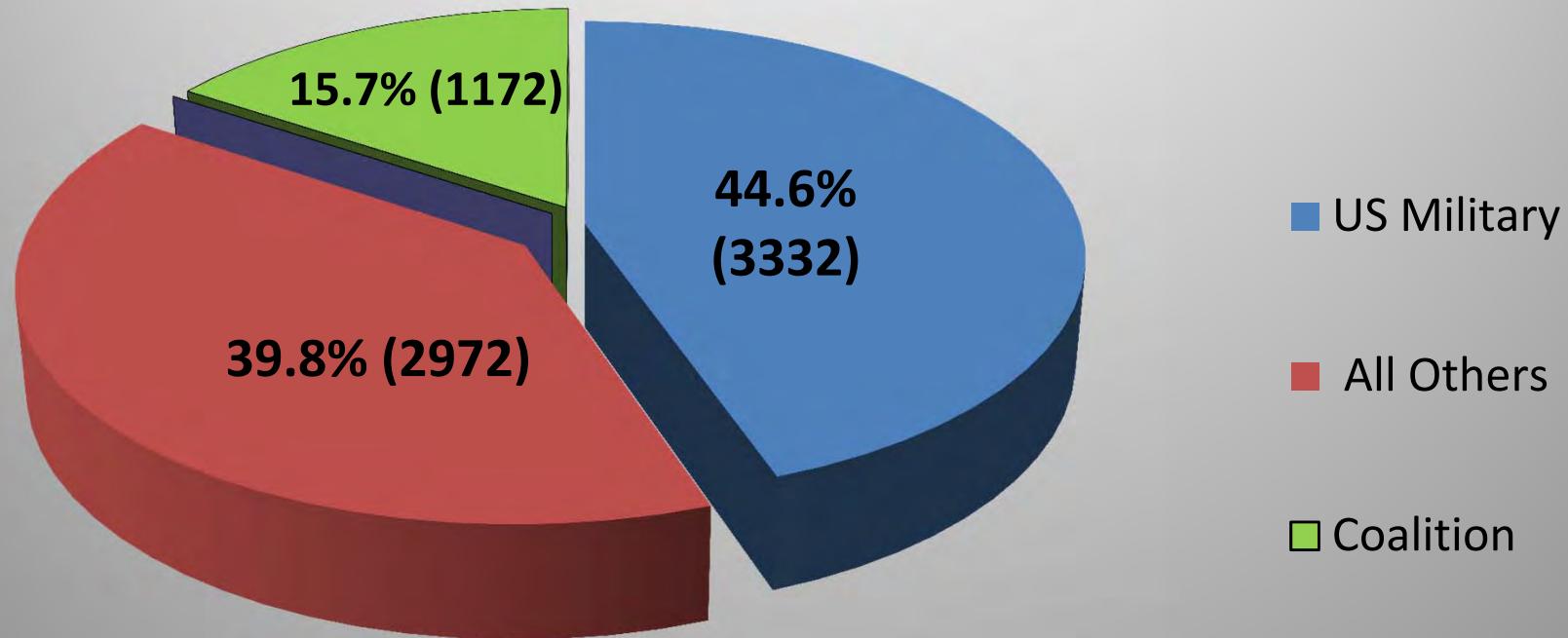
Monthly Trauma Admissions by Facility



OEF

US Military, Coalition, All Others

Total Admissions (n=7476)

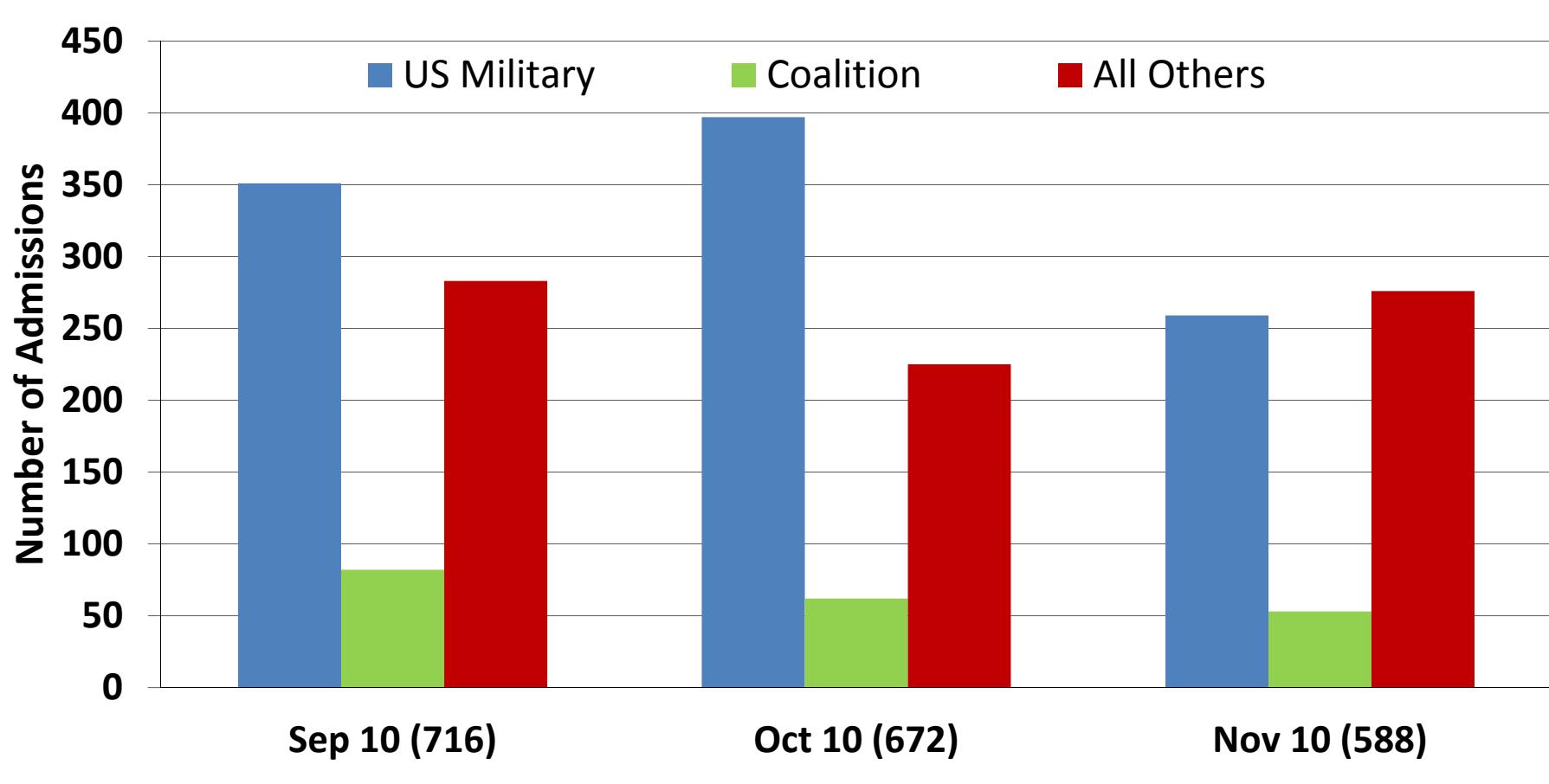


Rolling 12 months: Dec 09 – Nov 10

OEF Admissions



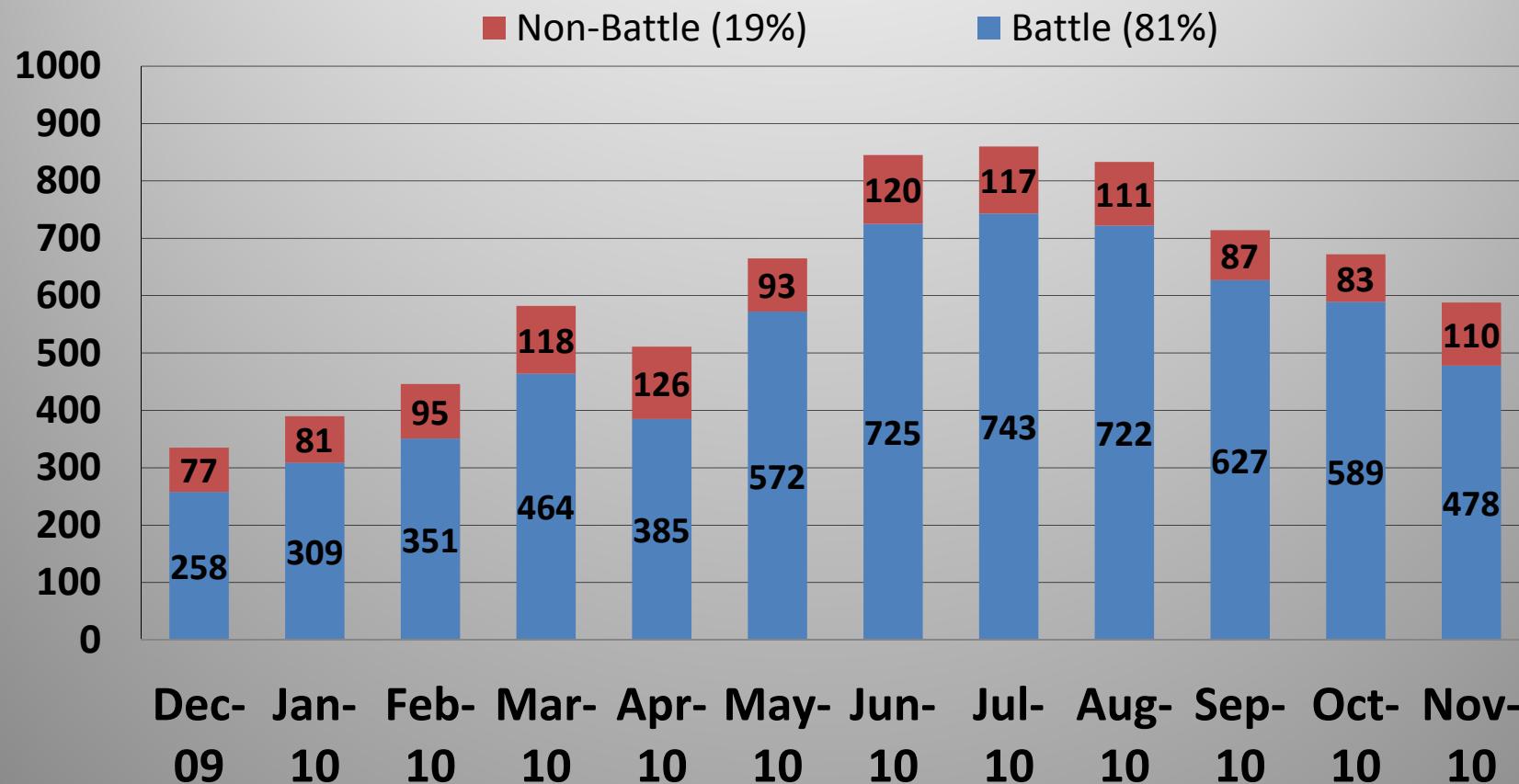
OEF Trauma Admissions



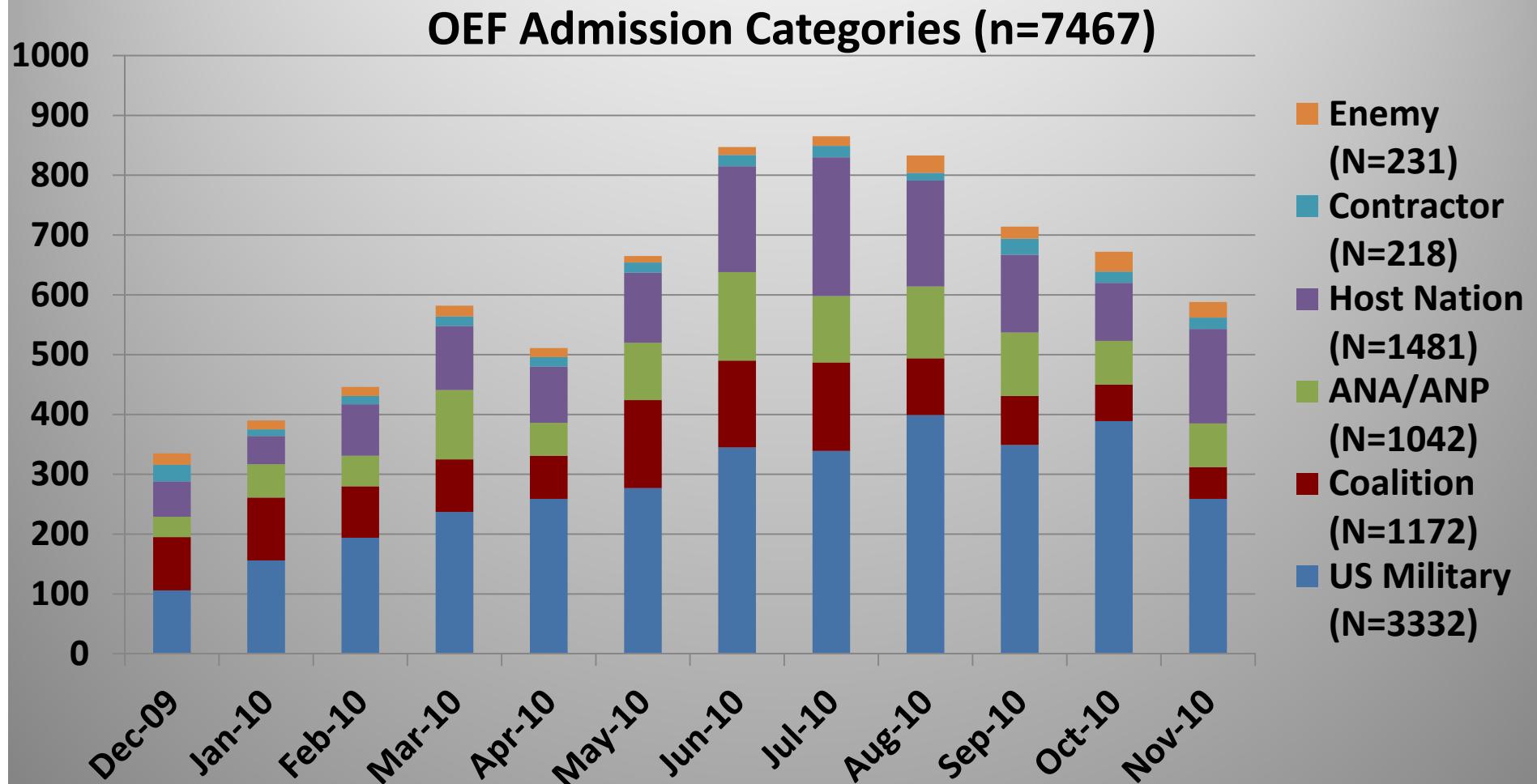
OEF Total Trauma Admissions

Battle vs. Non-Battle Injury

OEF Battle vs. Non-Battle Injury – 1 Year

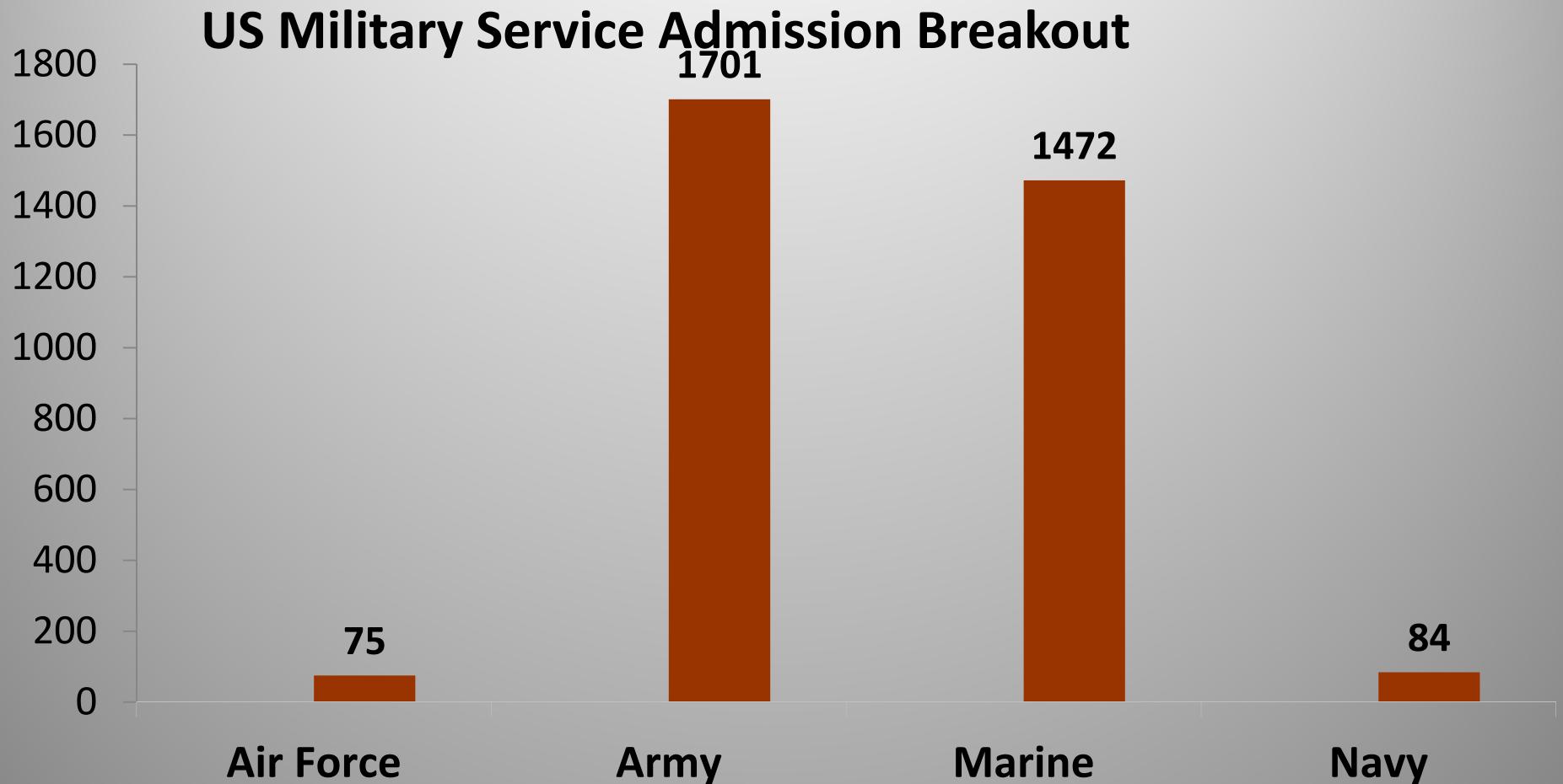


OEF Admission Category Break-Down

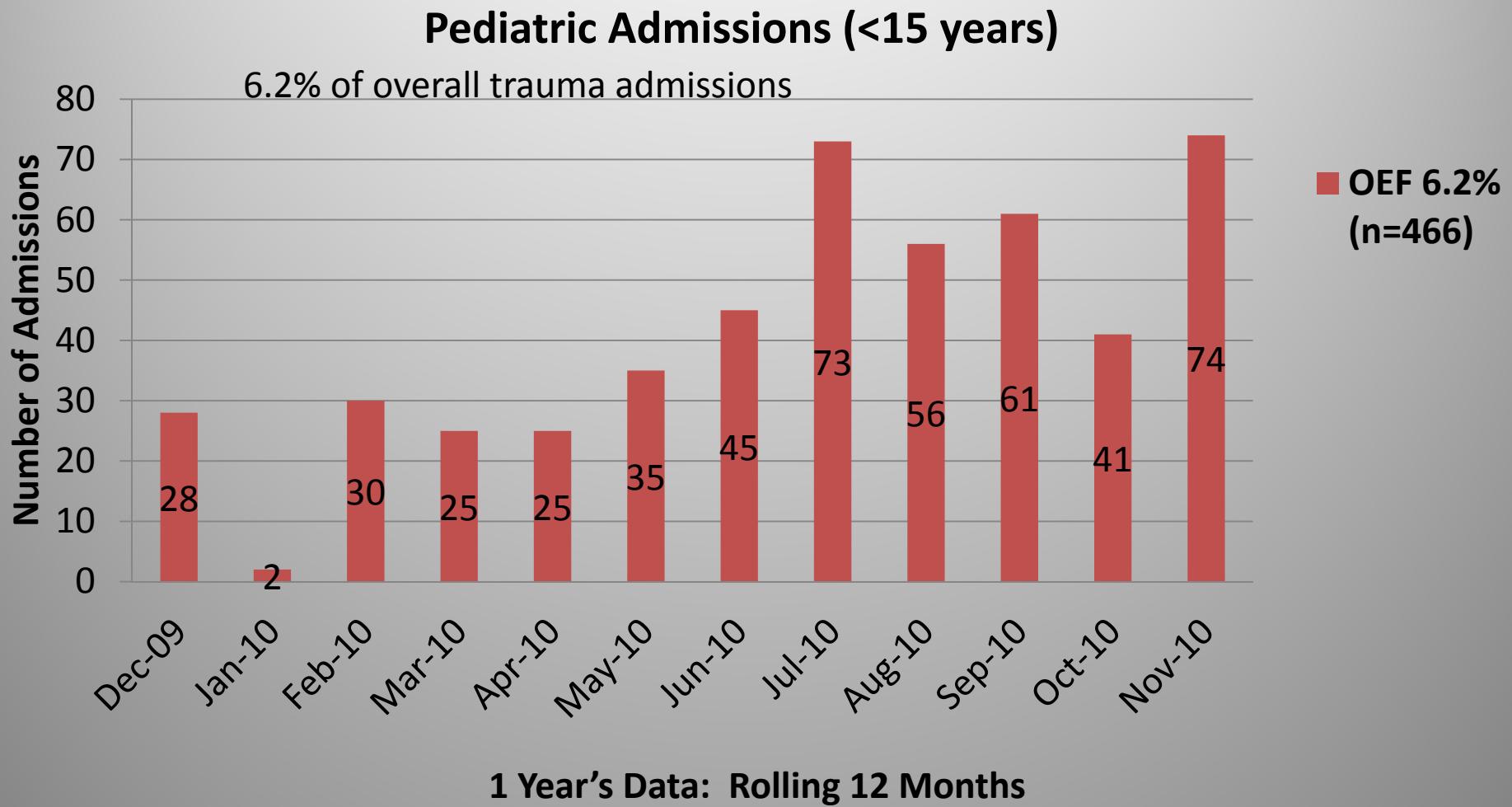


OEF

US Military Injured



OEF Pediatric Admissions

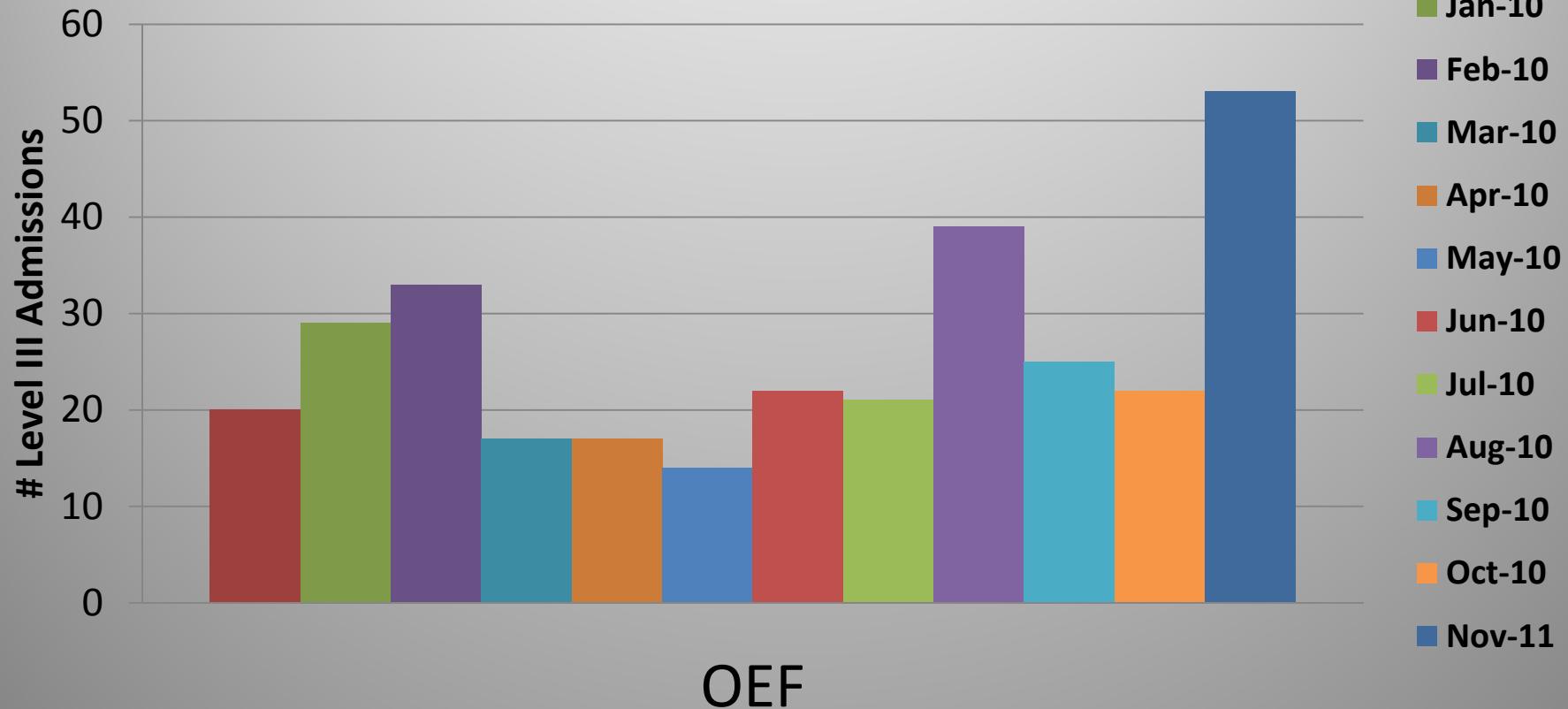


OEF Theater Hypothermia

Admission Temperature < 96 F or < 35.5 C

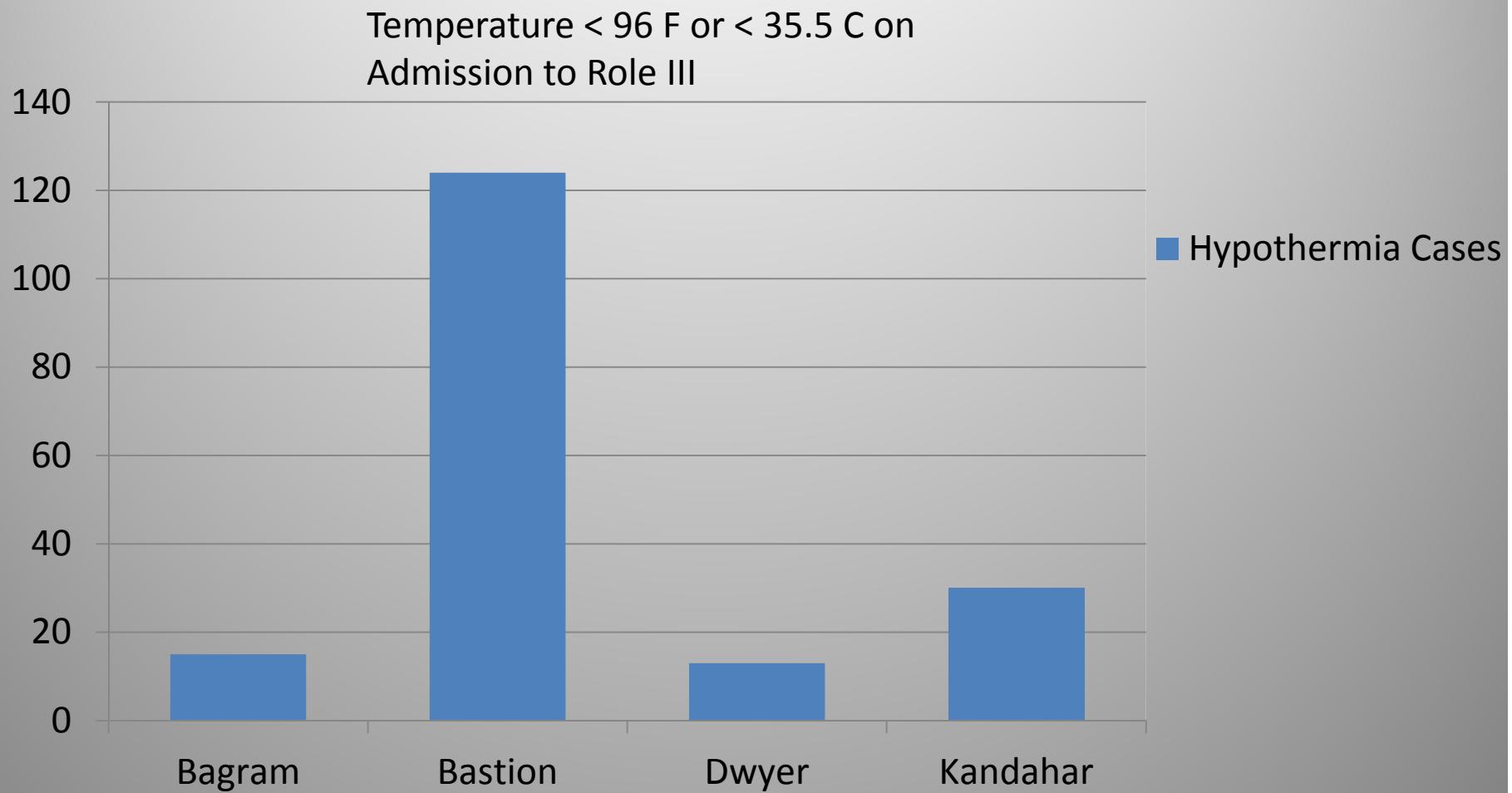
1-Year's Data: Dec 09 – Nov 10

4.2% of total admissions



OEF

OEF Hypothermia Cases by Facility



1-Year's Data: Dec 09 – Nov 10

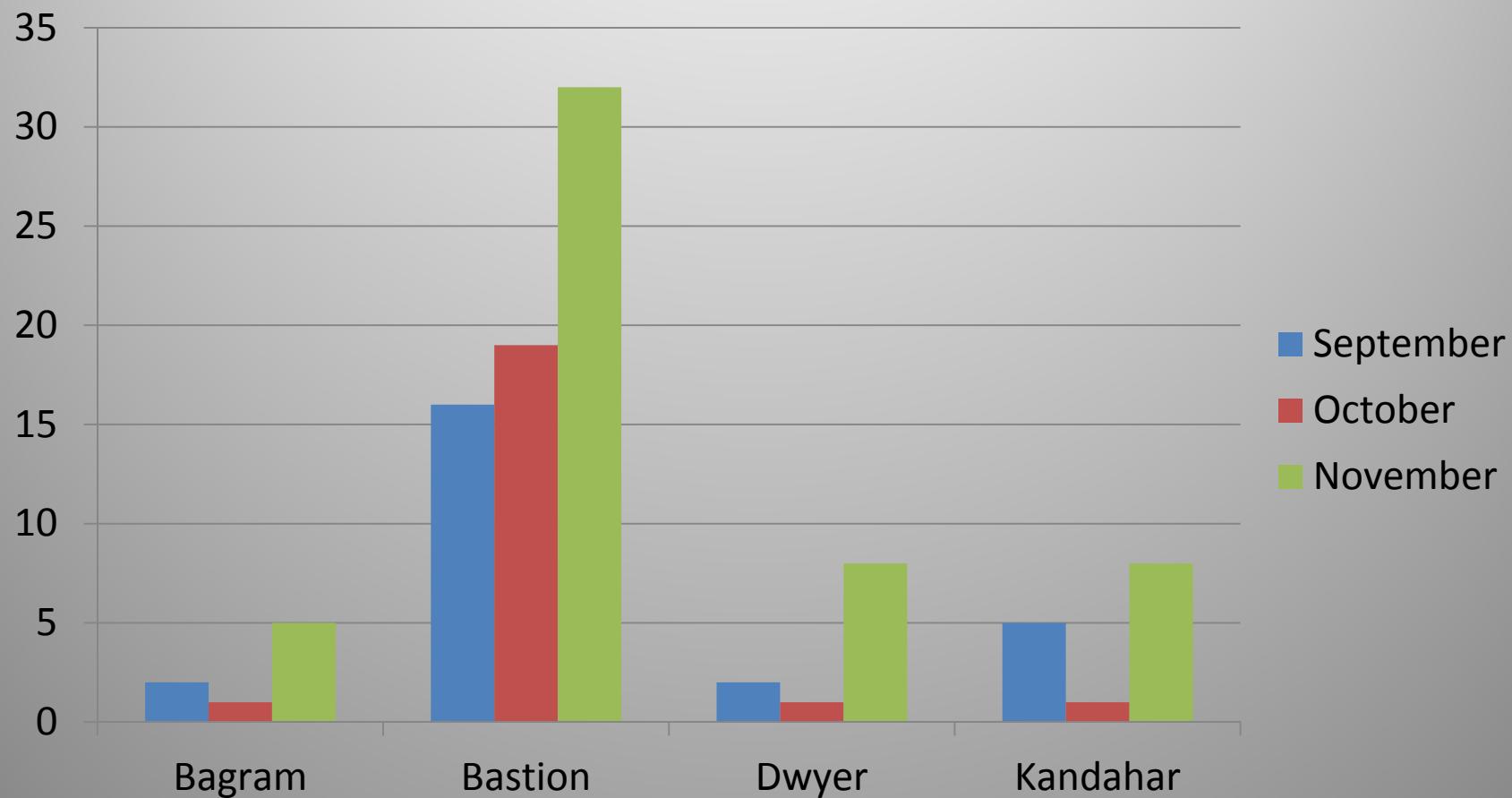
12/2012

12

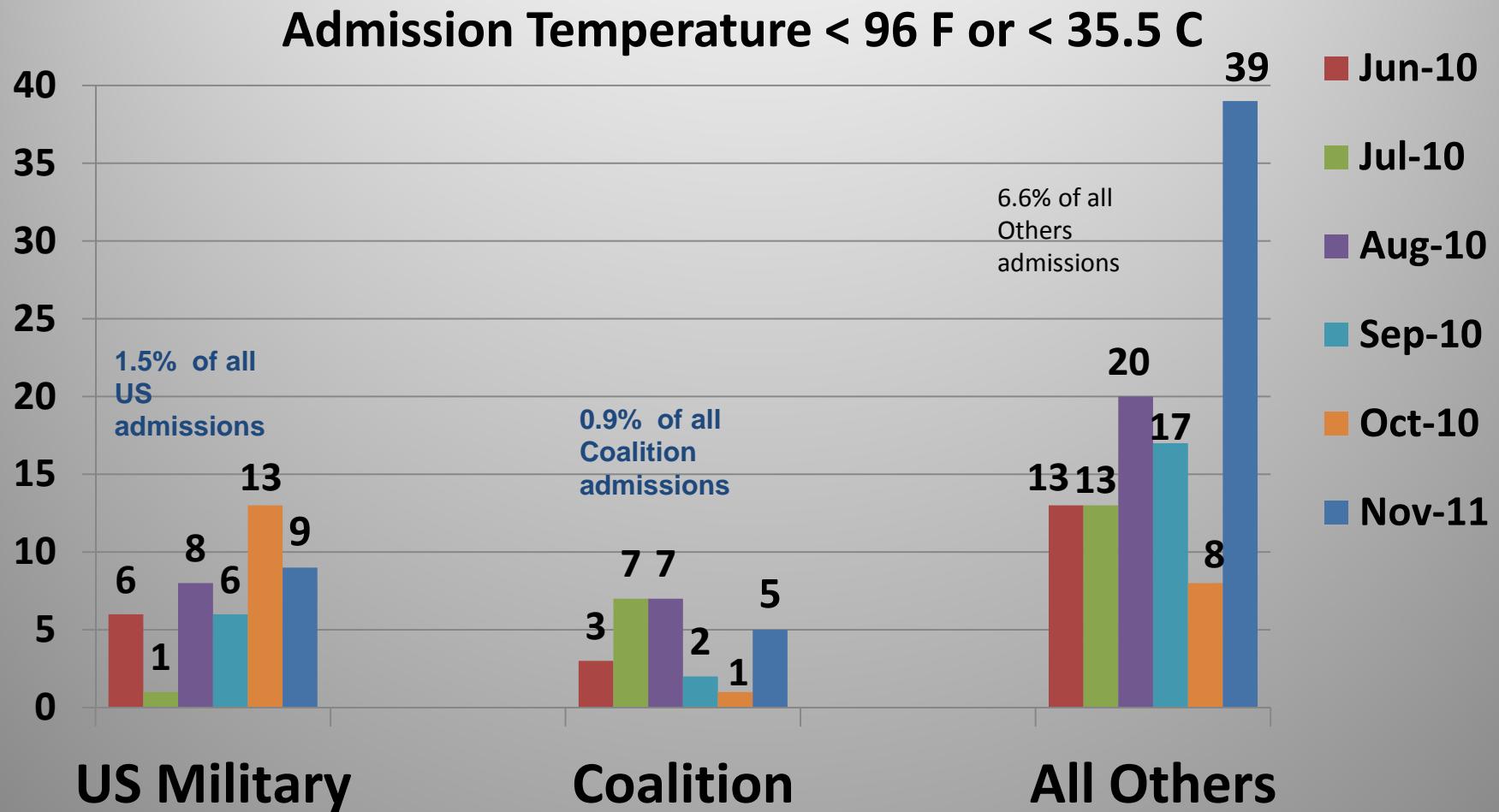
Right Patient, Right Care, Right Place, Right Time

OEF Hypothermia Cases by Facility

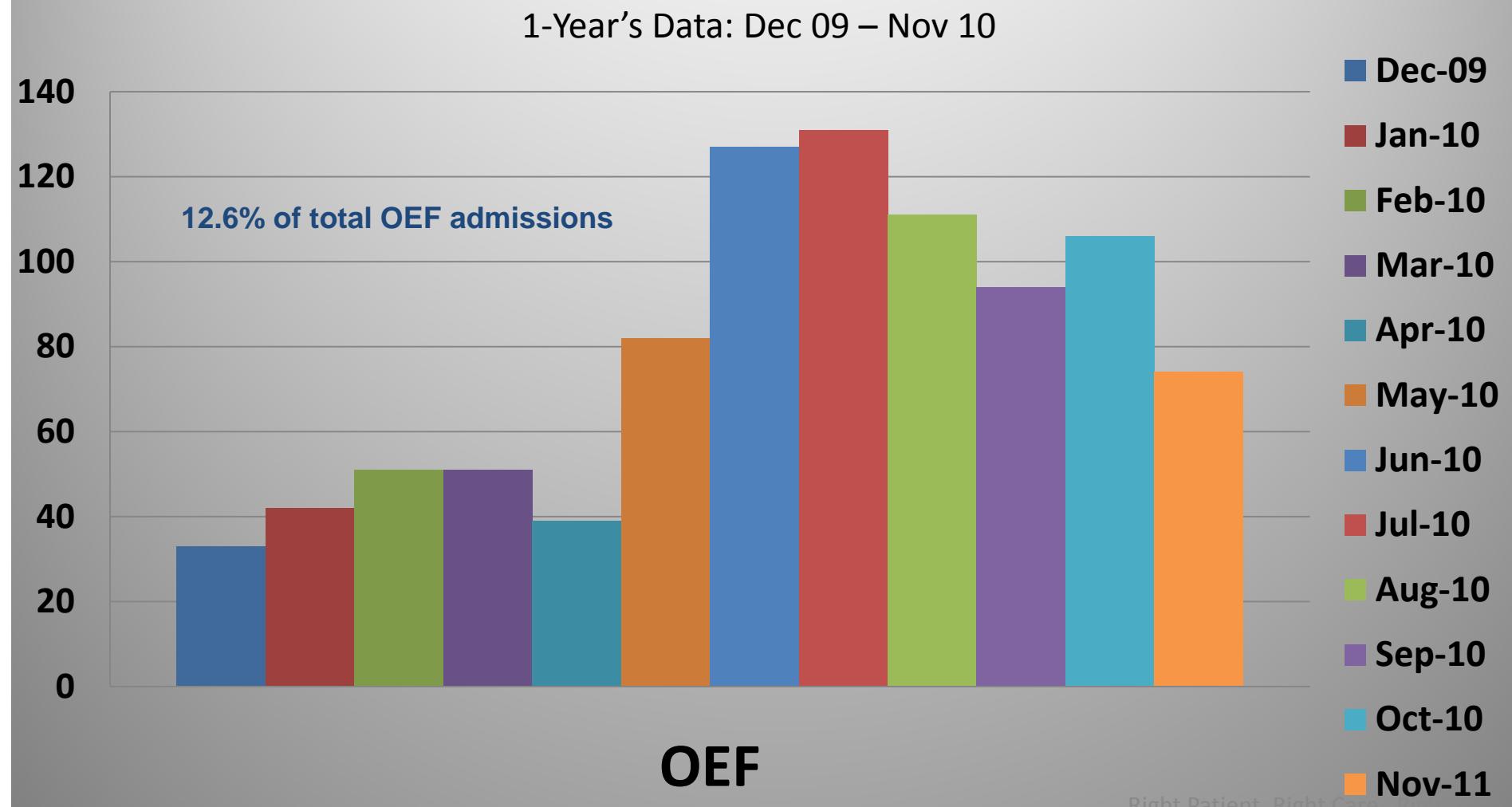
Temperature < 96 F or < 35.5 C on
Admission to Role III



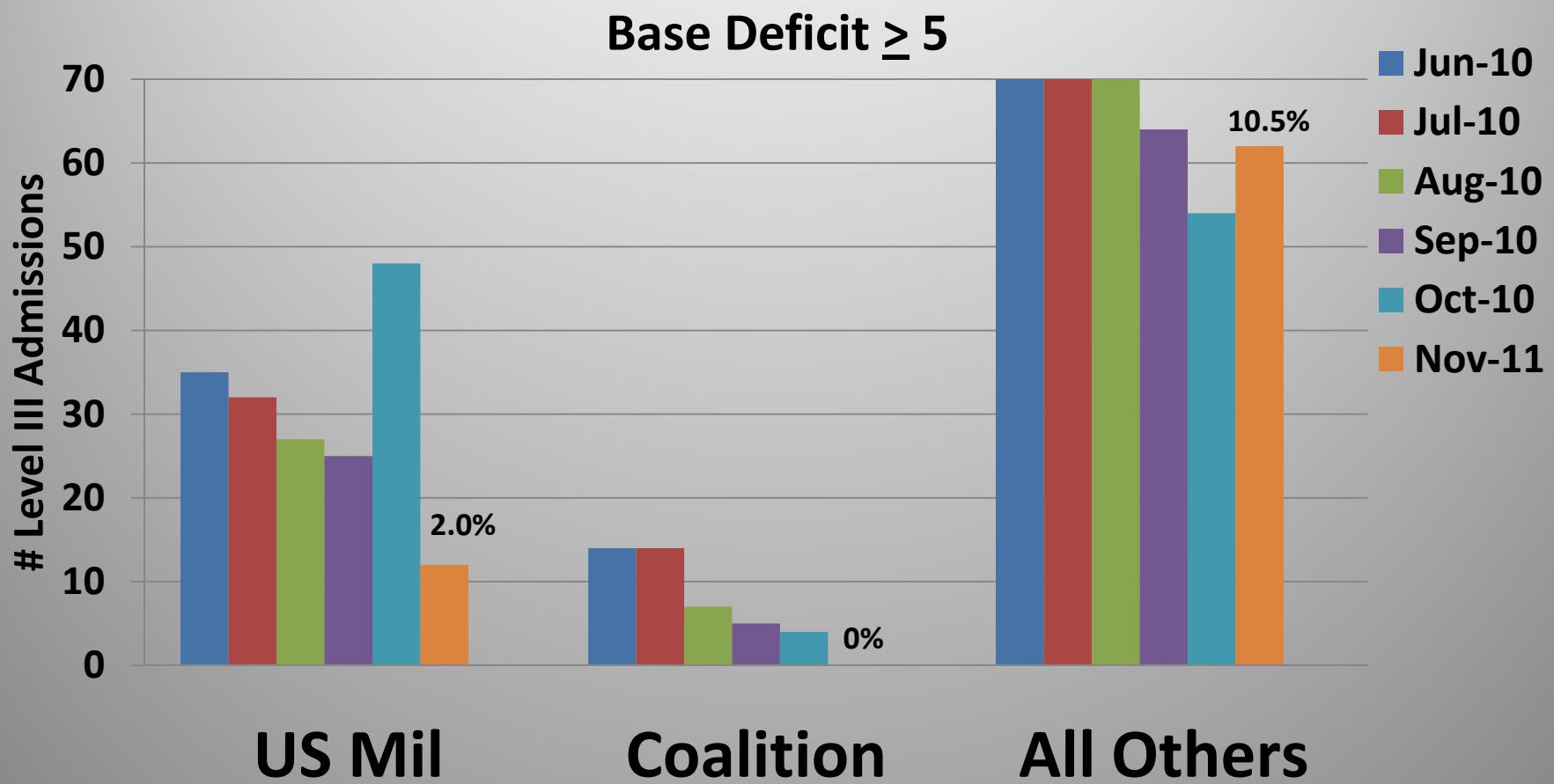
OEF Hypothermia Breakdown



OEF Shock on Admission (BD > 5)



OEF Shock on Admission

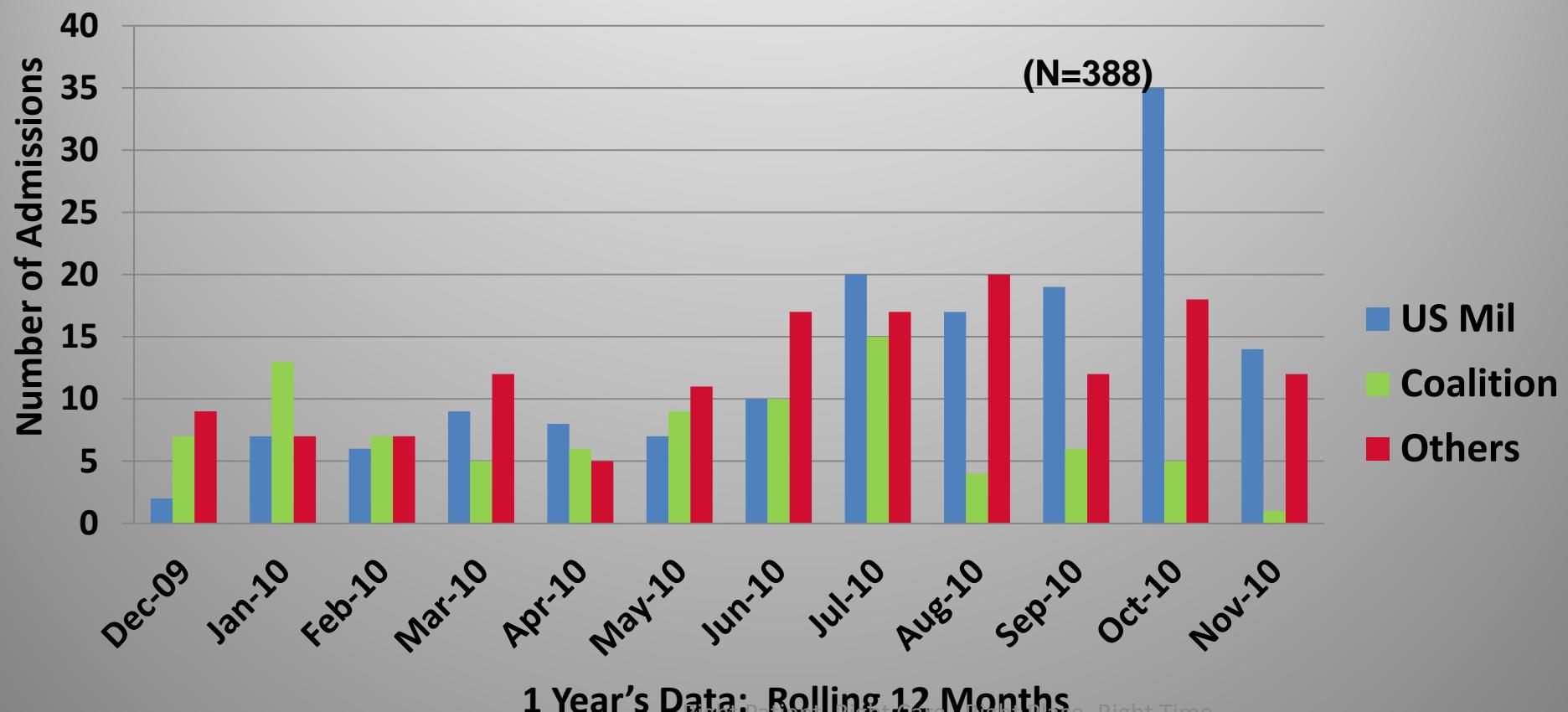


OEF Total

Massive Transfusions

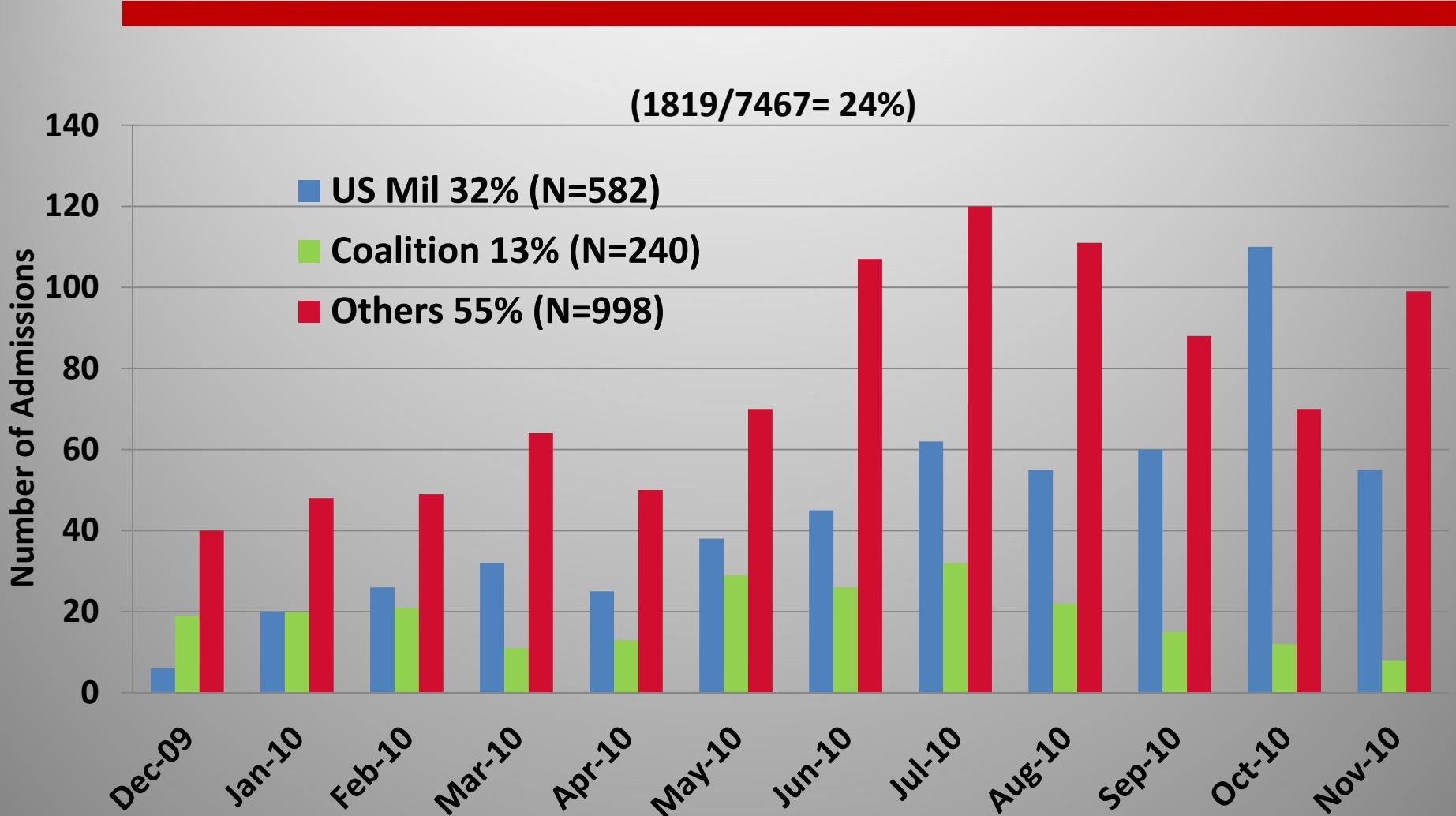
Massive Transfusions

Defined as ≥ 10 units PRBCs in 24 hours



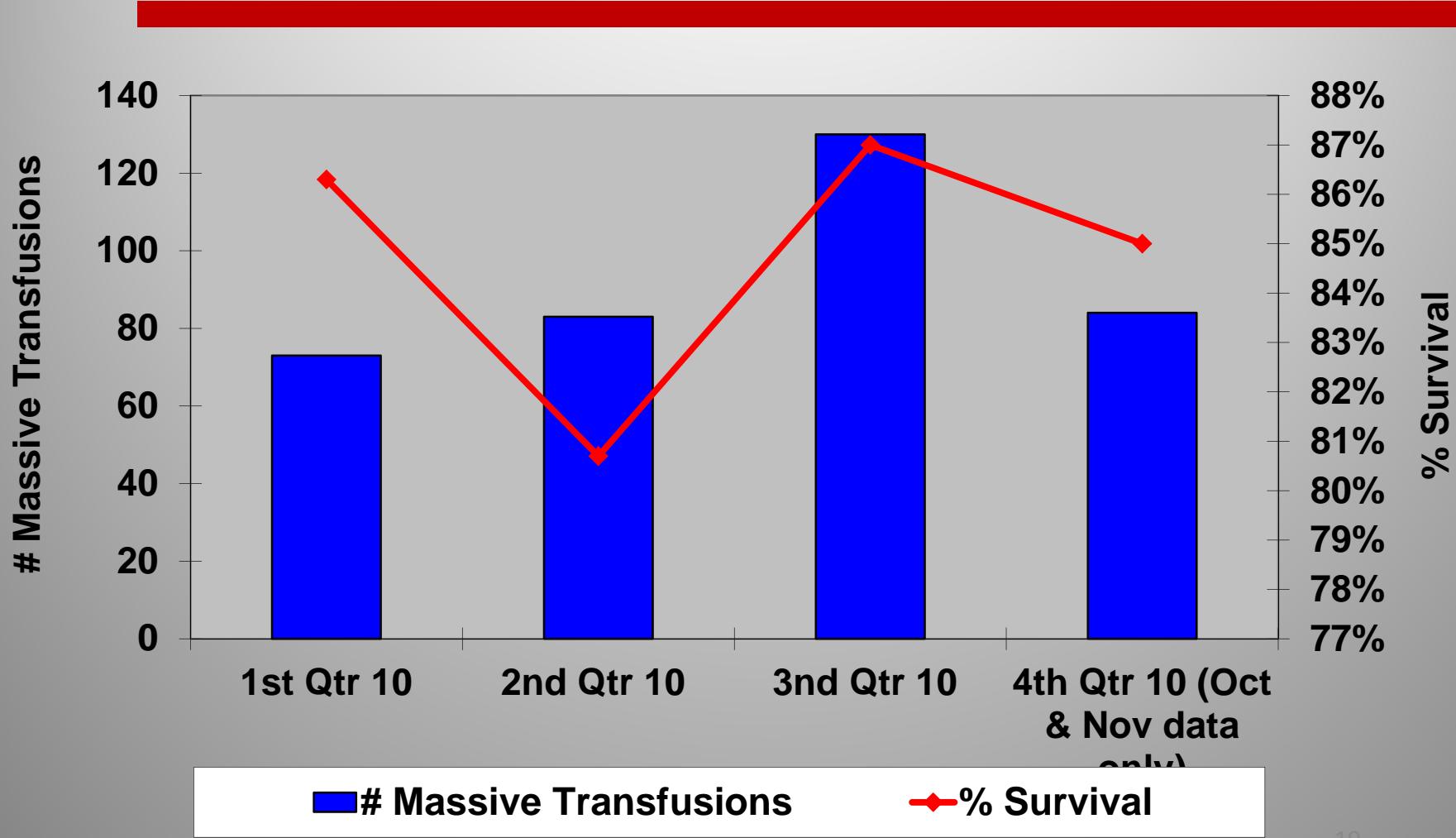
OEF Total

Casualties Requiring Blood

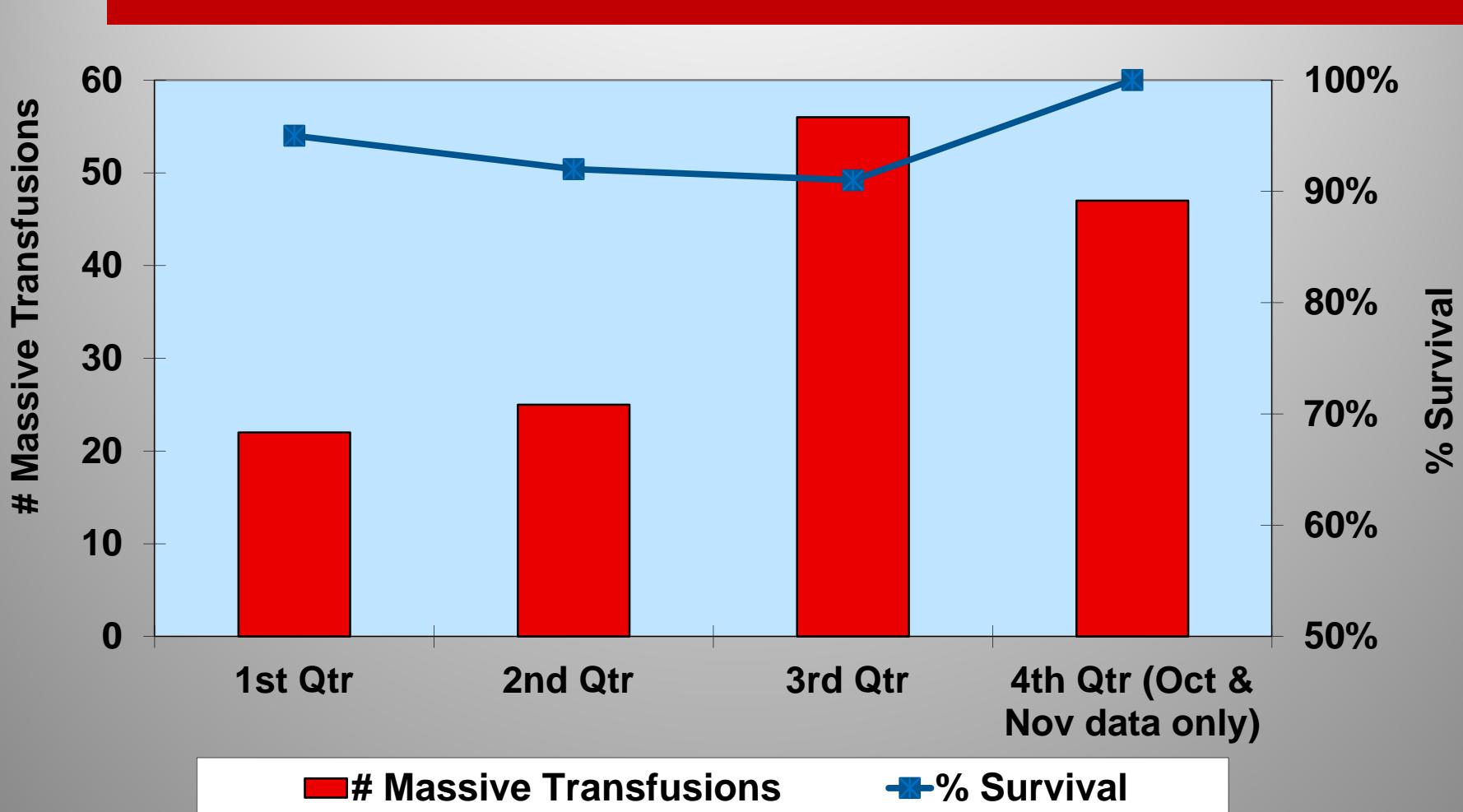


OEF Level III

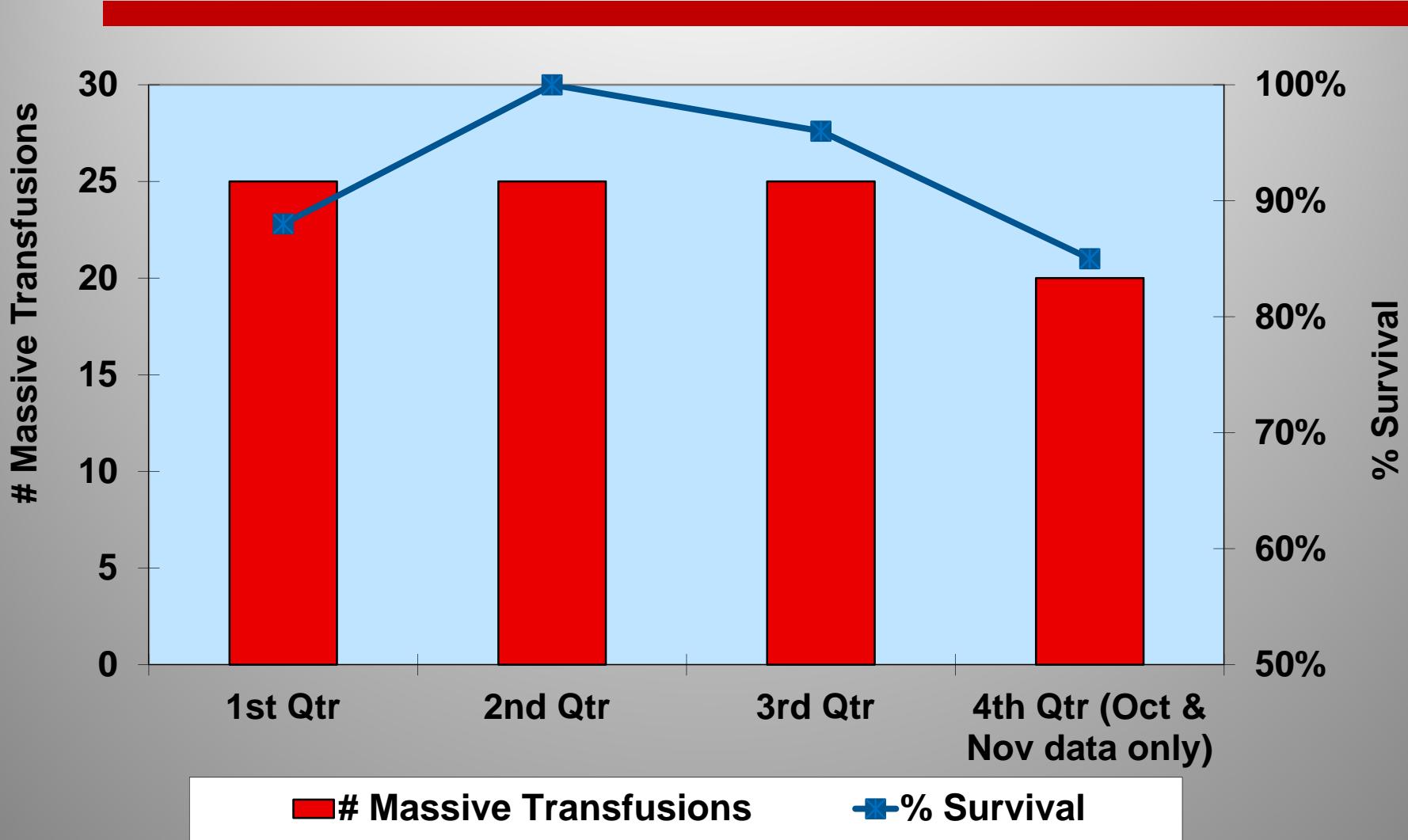
Massive Transfusion Survival



OEF Massive Transfusion Survival Long Term US Military Only



OEF Massive Transfusion Survival Theater Coalition Only



Massive Transfusion Component Therapy



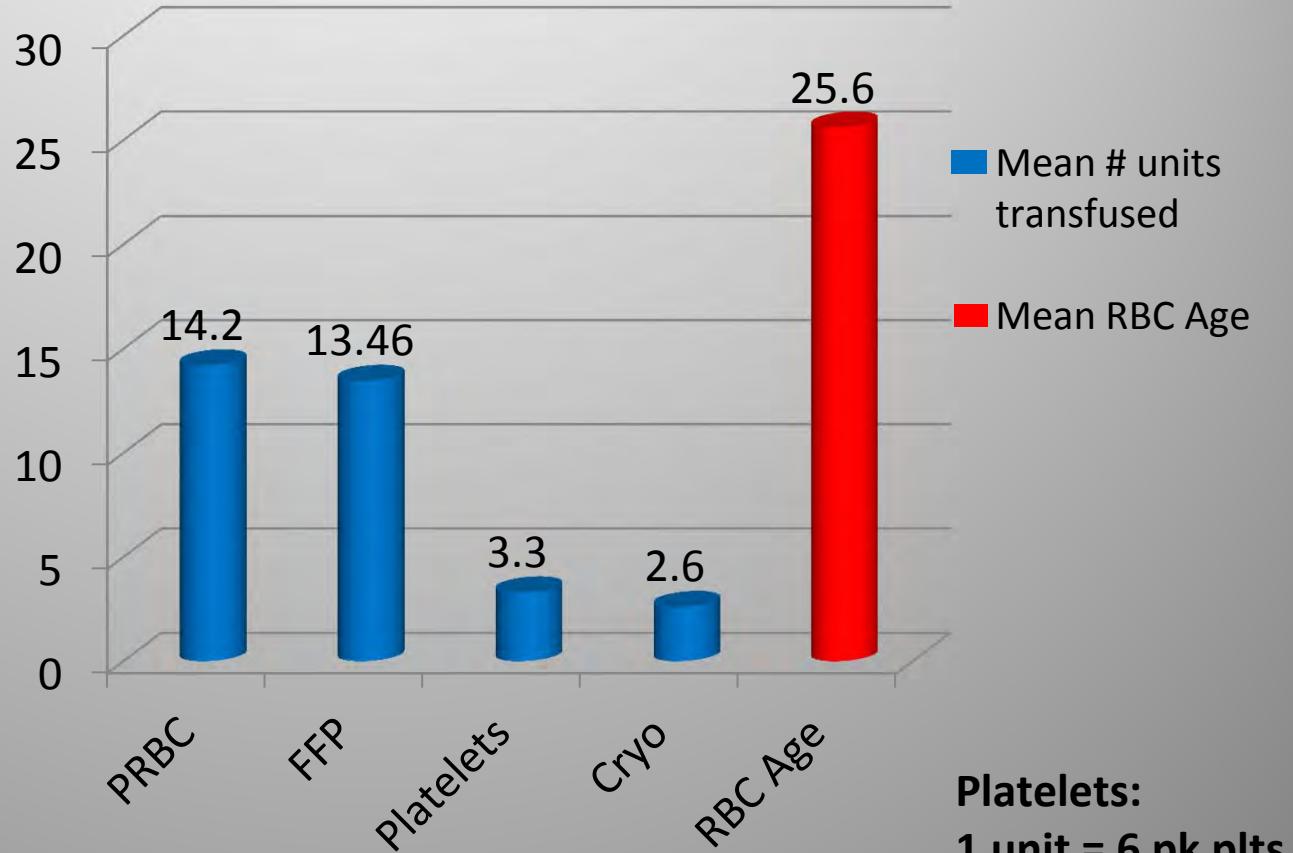
Total Units FWB: 6

(3 patients)

Doses of Factor VII: 2
(Level III Only)

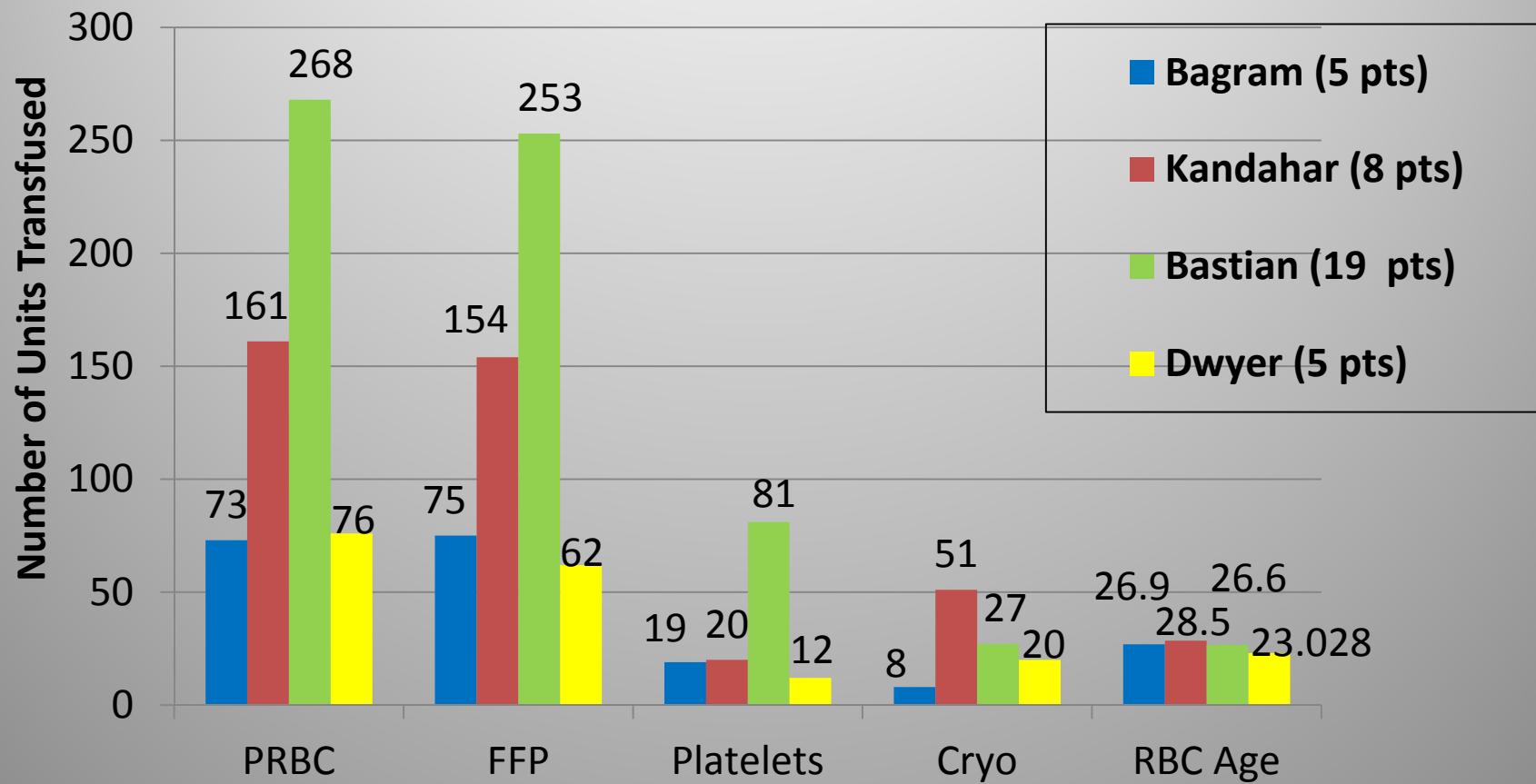
1/2012

Nov 2010 MT Patients (N= 37)

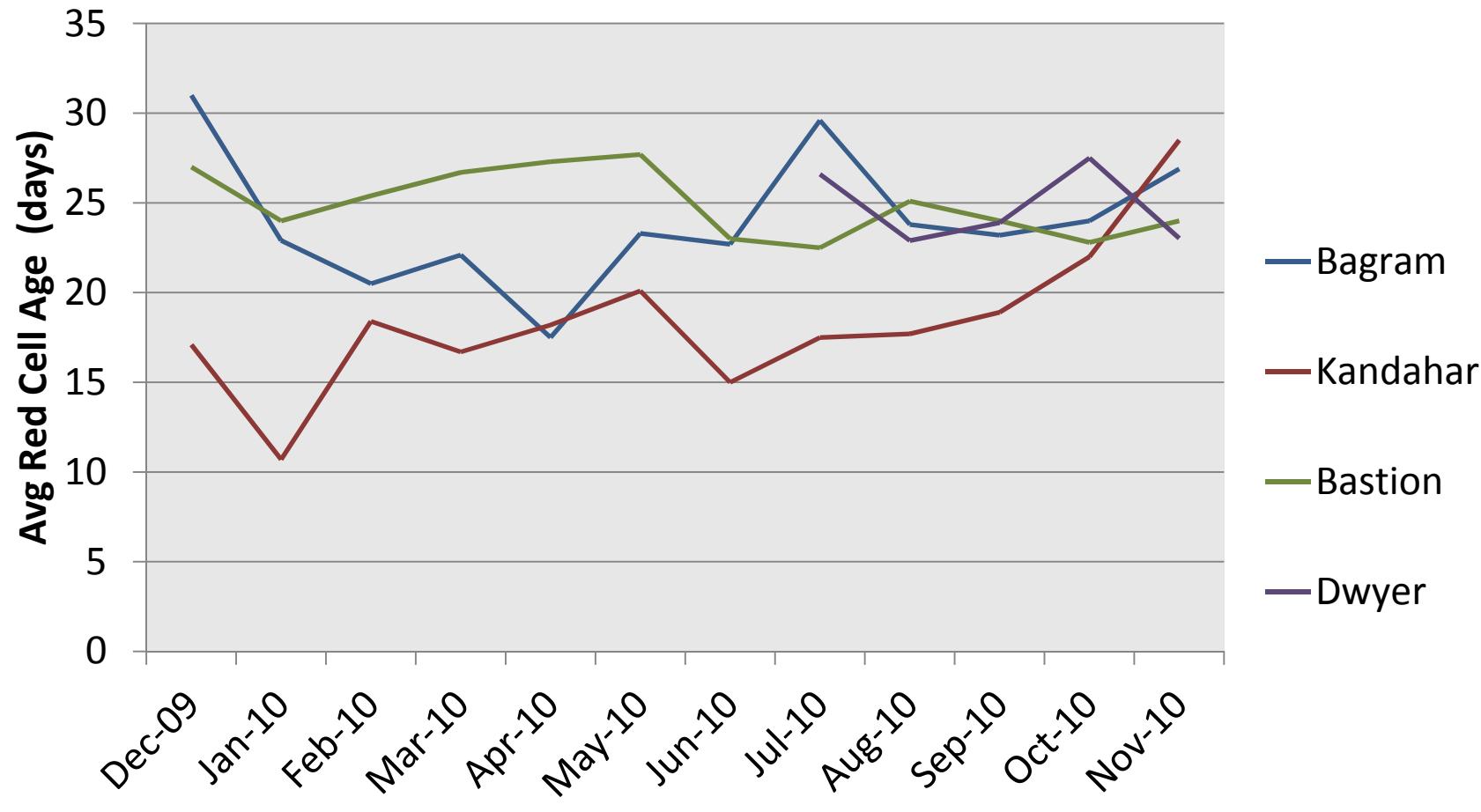


Massive Transfusion Component Therapy by Site

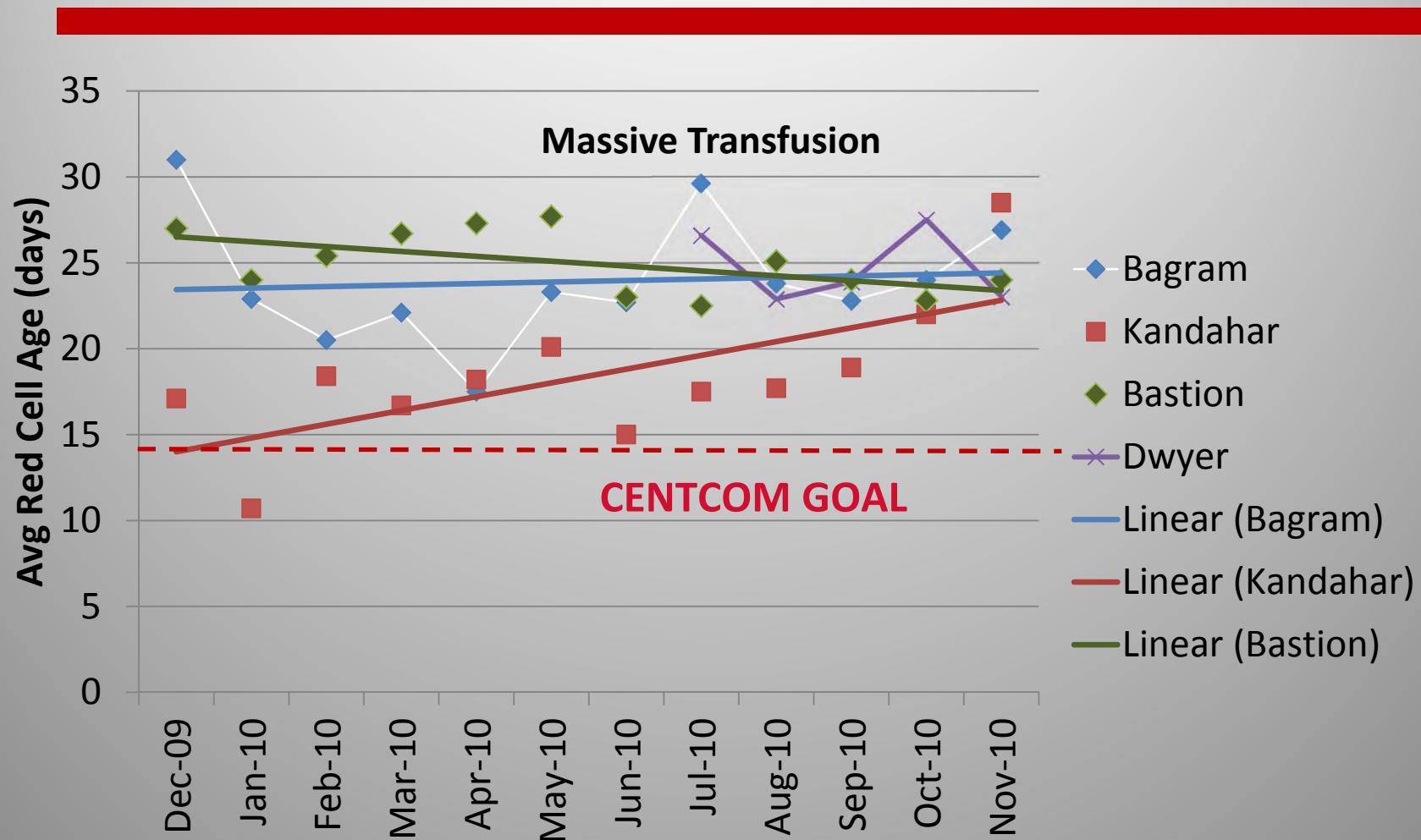
Nov 2010



Red Cell Age in Massive Transfusion



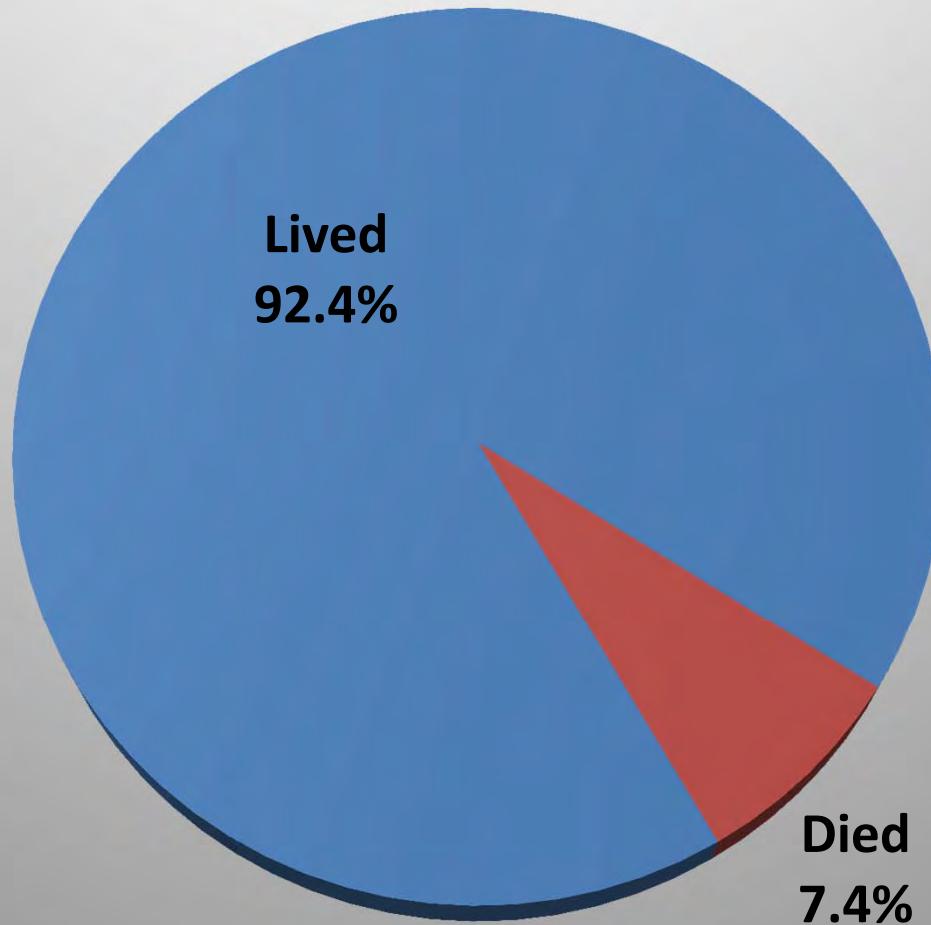
Trend Line of Red Cell Age in Massive Transfusion



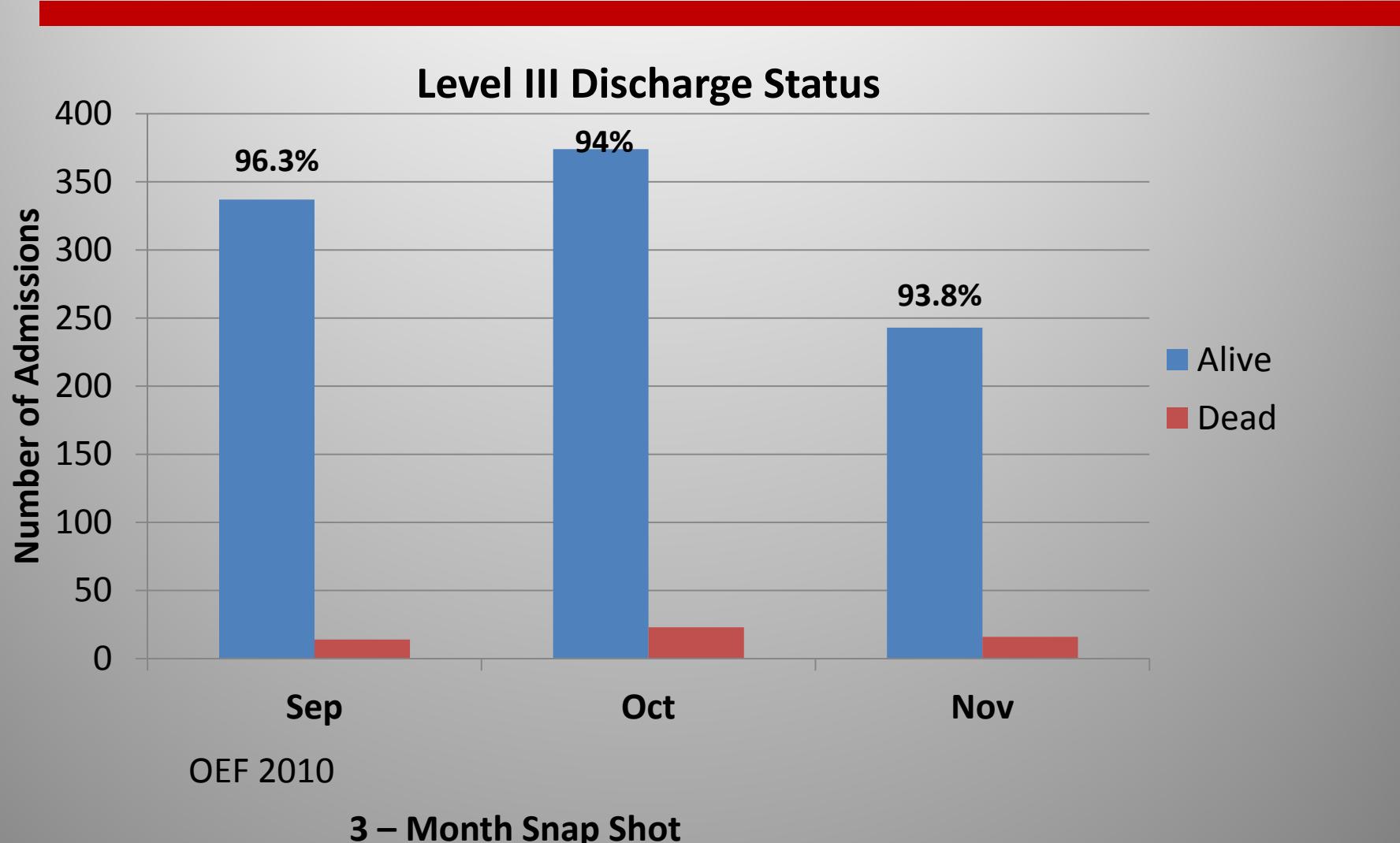
OEF In-Theater Survival

Total Level III Admissions Dec 09 – Nov 10

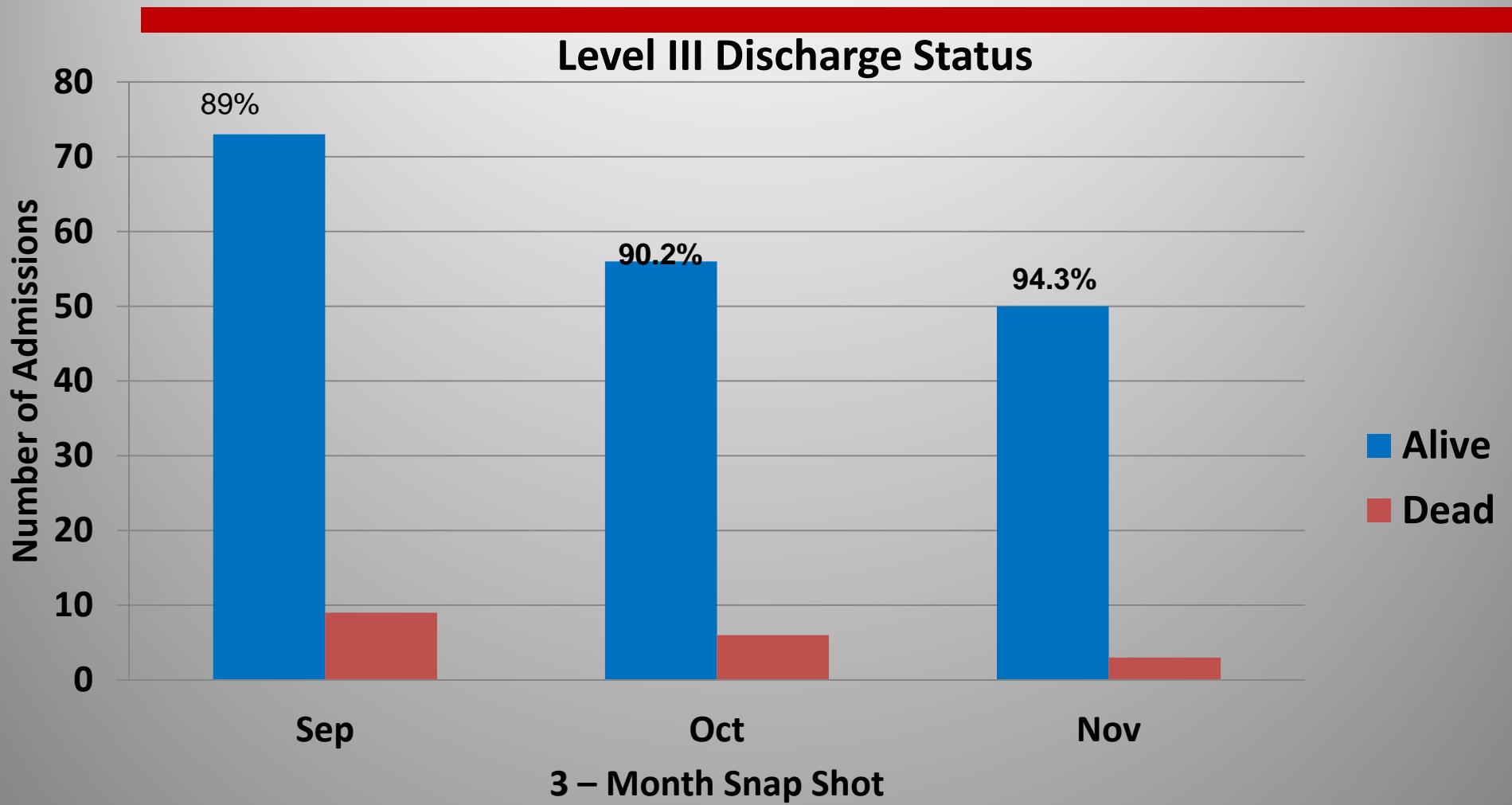
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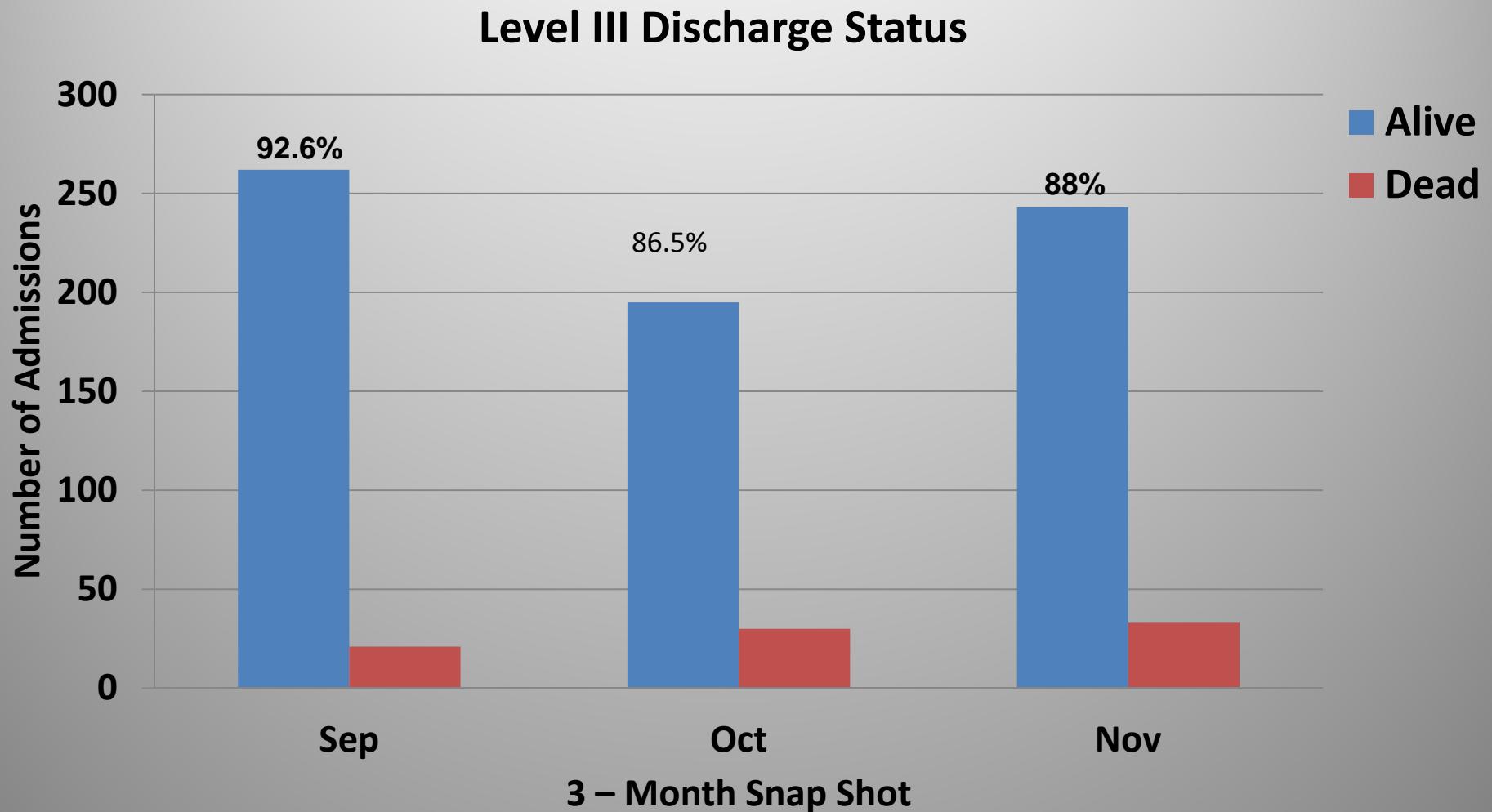
OEF US Military In Theater Survival



OEF Coalition Military In Theater Survival



OEF “All Others” In Theater Survival



Medical Performance Improvement

Data improves clinical patient care

Performance Improvement

- Trauma System Process Improvement
 - Pre-hospital Care and Triage
 - Timeliness of Care and Procedures
 - Review of Care
 - Appropriateness and Legibility of Documentation
 - Compliance / Development of Guidelines, Protocols and Pathways
 - Prevention

DATA COLLECTION!!!

Scheduled Communications

- Weekly f/u conf call with Level II+, III, IV and V
 - TMDS (Theater Medical Data Store) to list patients from Theater or beyond Theater
 - VTC/TC from Nursing Conf room 0700 Thursdays
 - M&M conference, share lessons learned
- Weekly Trauma Nurse Coordinators call
 - TC including all theater and LRMC/CONUS
- Monthly System-wide VTC for system issues
 - Includes VA, JPMRC, GPMRC, AMC, CENTAF Forward
 - 59MDW begins hosting Feb 07
- JTTS Directors conference call quarterly
- JTTR Tri-service working group

Access Trauma CPGs

CENTCOM CPG

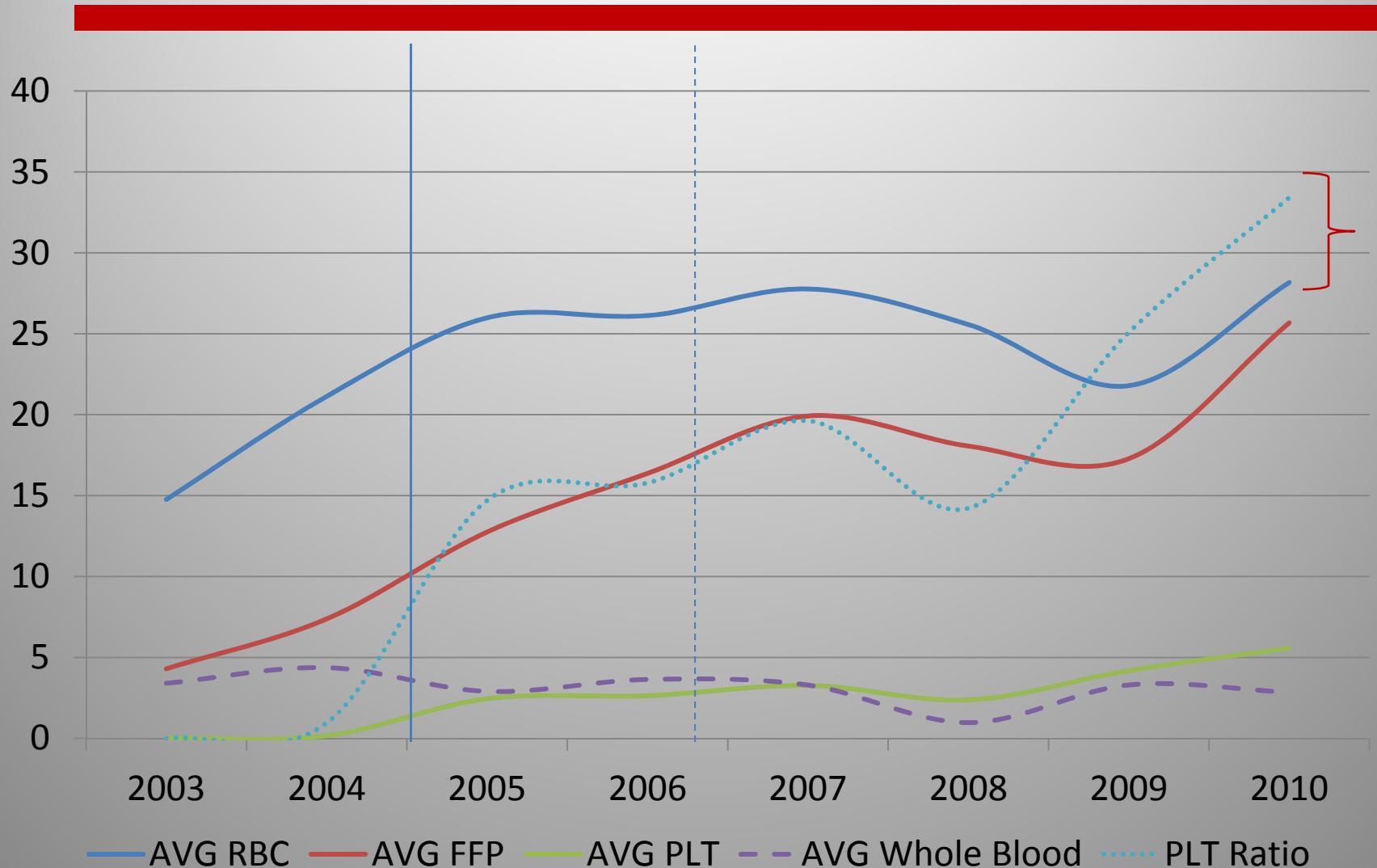
31 CPG

3 Pending (Pain& Sedation, Multiple Amputation,
Renal Replacement)

- <http://www.usaisr.amedd.army.mil/cpgs.html>
- Migration MHS
- Guidelines / Info
 - TMDS
 - CENTCOM CPG

Impact CPG

Massive Transfusion Component Therapy



CPG “Authority”

- SME Panel
 - Military
 - Surgeons General Trauma / General Surgery Consultant
 - Medical Commands
 - Civilian
 - ACS Committee on Trauma
- CENTCOM JTTS Director
- JTS Director and Deputy Director
- CENTCOM SG

Research

Data creates new knowledge

Research Access to JTTR

- Complete a data application and data use agreement
- Internal Review Board (IRB) document must be completed
- Staff will provide input to requestor to refine final output
- Final data reviewed for any public affairs or OPSEC issues
- Currently >200 peer reviewed manuscripts utilizing JTTR data

Contemporary JTTS Issues

JTTS Afghanistan Trauma Conference
28-29 October 2010

JTTS Afghanistan Trauma Conference

- Concept: Evaluate emerging trends in trauma within the Afghanistan AO and develop effective mitigation strategies
- Hosted by KAF Role III
- 50 participants
 - Representation Role III, Role II, RCs
 - US military, coalition military
 - Representation American College of Surgeons
 - Trauma system evaluation

JTTS Trauma Conference

Lessons Learned

- Medevac documentation
- Enroute critical care sustainment
- Optimizing resuscitation
 - Thromboelastography / ROTEM
- Injury patterns
 - Spine fracture management
 - Multiple amputations
 - Massive transfusion ~100%
 - Wound management / increased infection

DRAFT MEDEVAC Report Template

JTTR ROLE II/ROLE III MEDEVAC REPORT					
MISSION #	BRN	PT LAST NAME	DATE OF MEDEVAC	FLT MEDIC	UNIT
CIRCULATION	Check if appropriate	Select location palpated and document rate	NEUROLOGICAL	Alert	Verbal
			(Circle One)	Pain	Unresponsive
BLEEDING					
PULSES:	CAROTID		HYPOTHERMIA	Check if appropriate	
	FEMORAL		HPMK		
	RADIAL		OTHER WARMING		
CPR/ACLS			PAIN MANAGEMENT	Check if appropriate	
TOURNIQUET (If Y/time placed)			MEDICATED?		
HEMOSTATIC DRESSING			EQUIPMENT ISSUES	Check if appropriate	
IV ACCESS			ZOLL		
VASOACTIVE MEDS			PROPAQ		
OTHER			VENTILATOR		
BREATHING/AIRWAY	Check if appropriate		SUCTION		
OBSTRUCTED			OTHER		
NEEDLE DECOMPRESSION			HAND OFF ISSUES	Check if appropriate	
ORAL AIRWAY			COMMUNICATION		
NASAL AIRWAY			DELAYED DEPARTURE		
LMA (KING LT/COMBI)			EQUIPMENT EXCHANGE		
EMERGENCY CRICH			RE-SUPPLY		
INTUBATION			OTHER		
VENTILATOR			OTHER ISSUES /NOTES		
SUCTION					
JTTR Draft Form September 2010: MEDEVAC DOCUMENTATION: FOR QUESTIONS REGARDING THIS FORM CALL DSN: 318-431-4430: RECEIVING FACILITY: Please scan/email document to: jttmedevac@afghan.swa.army.mil					

Management Casualties with Bilateral Lower Extremity Injuries

- Bastion or Dwyer (N = 43)
 - bilateral transfemoral (8, 19%)
 - transfemoral-transtibial (18, 42%)
 - bilateral transtibial (17, 39%)
- Median SBP [90/65], HR [131] and T [35.2] were consistent with hemorrhagic shock
- Acidosis [pH 7.14] and BD [11.5] and were normalized during initial operation (3.12 ± 1.91 hrs)
- Three (7%) presented in cardiac arrest and 5 (12%) required a resuscitative thoracotomy with aortic cross clamping.

JTTS Trauma Conference

Lessons Learned

- Clinical Practice Guideline (CPG)
 - Pain management
 - (Ready for CENTCOM SG)
 - Multiple amputation management
 - (Ready for SME vetting)

JTTS Trauma Conference

Lessons Learned

- New therapies
 - Tranexamic acid (used by UK @ Bastion)
 - Consensus not enough good data to support ubiquitous use
 - Limited use in patients with hyperfibrinolysis?
 - Renal replacement therapy
 - Junctional hemorrhage control

JTTS Trauma Conference

Lessons Learned

- Provider
 - Pre-deployment training
 - Develop / standardize common elements
 - Emergency War Surgery / Joint Forces Combat Trauma Management Course
 - Clinical practice guidelines
 - Familiarization training with theater electronic health record
 - Theater / deployment site specific MROE

JTTS Trauma Conference

Lessons Learned

- Provider
 - Optimal resourcing
 - US services grossly overtaxed @ current force structure
 - Modularity based upon casualty volume
 - Resiliency / compassion fatigue

Questions

?